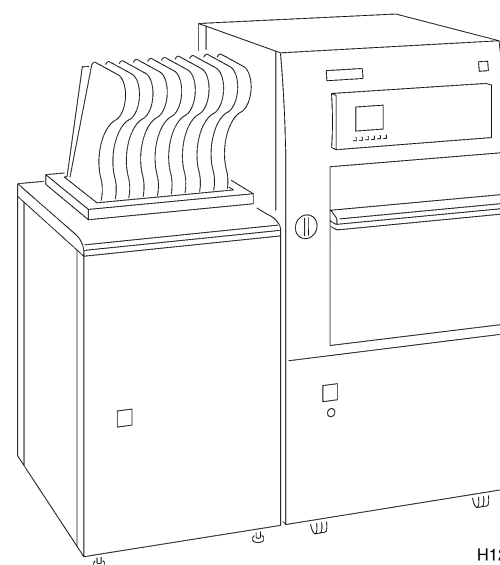




SITE SPECIFICATIONS
for the
***Kodak Ektascan 2180* LASER PRINTER**
and the
***Kodak X-Omat 180* LP and LPS PROCESSORS**



H126_0730AA

PLEASE NOTE

The information contained herein is based on the experience and knowledge relating to the subject matter gained by Eastman Kodak Company prior to publication.

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**Note**

Most of the processor illustrations in this publication show the 180 LP Processor but apply also to the 180 LPS Processor.

**Warning**

To avoid hazardous conditions, keep floors and floor coverings around your *Kodak X-Omat* Processor and associated drains clean and dry at all times. Any accumulation of fluids from mixing tanks, drain lines, etc, should be cleaned up immediately. In the event of an accumulation of liquid due to backup, overflow, or other malfunctions of the drain associated with your *Kodak X-Omat* Processor, call a plumber or other contractor to correct any problem with the drain. Kodak accepts no responsibility or liability whatsoever for the serviceability of any drain connected to or associated with a *Kodak X-Omat* Processor. Such drains are the sole responsibility of the customer.

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Section 1: Site Specification Summary



Important

All *Kodak* Equipment is to be installed in a site **prepared by the customer**. Kodak service personnel cannot begin installing equipment until the site is properly prepared by the customer.

Dimensions (Uncrated)	2180 Laser Printer:	762 mm wide x 787 mm deep x 1505 mm high (30 x 31 x 59 ¹ / ₄ in.)
	180 LP Processor:	553 wide x 787 mm deep x 1003 mm high (21 ³ / ₄ x 31 x 39 ¹ / ₂ in.)
	180 LPS Processor:	553 wide x 787 mm deep x 1330 mm high (21 ³ / ₄ x 31 x 52 ¹ / ₂ in.)
Clearances	Depends on whether a Processor is installed and whether Seismic Brackets are required. For recommended clearances, see the section that starts on Page 37 .	
Weight	2180 Laser Printer:	<u>Installed:</u> 363 kg (800 lb) <u>Crated:</u> 462 kg (1020 lb)
	180 LP Processor:	<u>Installed and filled:</u> 151 kg (332 lb) <u>Crated:</u> 165 kg (368 lb)
Electrical	2180 Laser Printer:	Dedicated line. See the section that starts on Page 16 .
	180 LP and LPS Processor:	Its own dedicated line. See the section that starts on Page 27 .
Cabling	2180 Laser Printer:	One data and one or two control cables from each imaging device to be connected, installed separately from the power cabling
Temperature	Maximum:	15 - 30 C (59 - 86 F)
	Recommended:	18 - 24 C (64 - 75 F)
Relative Humidity	Maximum:	15 - 60%
	Recommended:	30 - 60%
Magnetic Field	2180 Laser Printer:	Outside the 5 mT (50-gauss) line on the MRI fringe plot for the site
	180 LP and LPS Processor:	Outside the 0.5 mT (5-gauss) line on the MRI fringe plot for the site
Heat Loads	2180 Laser Printer:	5300 kJ/hour (5000 Btu/hr) during normal use
	180 LP and LPS Processor:	4220 kJ/hour (4000 Btu/hr) during normal use
Airflow	2180 Laser Printer:	Recommended minimum of 150 mm (6 in.) clearance at the back with a minimum of 10 total air changes per hour, 2 per hour of outside air
	180 LP and LPS Processor:	Minimum of 10 total air changes per hour
Processor Venting	The 180 LP or LPS Processor exhaust at its maximum rating removes 2 m ³ /min (75 ft ³ /min) at 66 C (150 F) at full load. The building exhaust system <u>must</u> be running at <u>all</u> times and <u>must</u> provide the required negative static pressure in the duct connected to the Processor. See Pages 33 and 34 . Minimum diameter of the building exhaust duct is 76 mm (3 in.).	

(Summary is continued on the next page.)

SITE SPECIFICATIONS

Water Supply	Temperature:	4.4 - 32.2 C (40 - 90 F)
	Pressure:	173 - 692 kPa (25 - 100 psi)
	Flow Volume:	Controlled within the Processor to 2.850 L/min 15% (³ / ₄ gal/min)
	Filtration:	50 micron (or less) filter in the water supply line
	Regulations and Codes:	Must conform with local water supply regulations
Processor Drains	Drains must be of chemical-resistant, non-corrosive material, such as PVC. Do not use copper or brass.	
	Water Drain:	Site specific and as per local discharge regulations Connection: Minimum 76 mm (3 in.), capacity of 15 L/min (4 gal/min)
	Fixer Drain:	Site specific and as per local discharge regulations
	Developer Drain:	Site specific and as per local discharge regulations
Placement	Recommended minimum of 3 metres (10 ft) from the normal patient contact areas	
Noise Dissipation	Maximum of 65 dBA	

Section 2: Site Preparation Checklist and Responsibilities



Important

All *Kodak* Equipment is to be installed in a site **prepared by the customer**. Kodak service personnel cannot begin installing equipment until the site is properly prepared by the customer.

Building Alterations	Customer:	All building alterations required to install the 180 LP or LPS Processor and the 2180 Laser Printer
Air Conditioning and Ventilation	Customer:	All air conditioning system works or modifications to provide adequate ventilation and to ensure proper operation of the equipment
Electrical	Customer:	A dedicated power outlet for the 2180 Laser Printer. If installing a Processor also, a second dedicated power outlet is required.
	Customer:	A general power outlet for the Control Terminal, if needed
	Customer:	Power supply with a main power disconnect switch on the wall near the 180 LP or LPS Processor
	Customer:	Connection of power to the 180 LP or LPS Processor
	Customer:	(Recommended) 2 general power outlets for miscellaneous equipment for installation and service
Cabling	Customer:	Installation of data and control cables from <u>each</u> imaging device to the 2180 Laser Printer
	Kodak:	Connection of data and control cables to the 2180 Laser Printer
Water Supply to the 180 LP or 180 LPS Processor	Customer:	Installation of the cold water supply to the Processor with a pressure regulator (if required), a filter isolation valve, a 50-micron (or less) filter, and a flow regulating valve
	Customer:	Connection of the water supply to the Processor inlet with a solid copper line
	Customer:	If required, extension of the water supply system to provide a hose point
	Customer:	(Recommended) Installation of a sink near the Processor for washing the racks and other components
Developer and Fixer Replenisher Supply Lines to the 180 LP or LPS Processor	Customer:	Installation and connection of replenisher supply lines (for developer and for fixer) from the bulk chemical supply (such as an Automixer II) to the Processor replenishment inlets

Checklist continued on next page.

Drains for the 180 LP or LPS Processor (Do not use copper or brass)		<u>Developer</u>
	Customer:	Installation of the appropriate waste collection facilities, drain line, and drain point in the floor near the Processor
		<u>Fixer</u>
	Customer:	Installation of the appropriate fixer collection or silver recovery facilities, drain line, and drain point in the floor near the Processor
	Customer:	“Open” connection of the Processor waste fixer and fixer overflow into the drain point
		<u>Water</u>
	Customer:	Installation of the appropriate waste collection facilities, drain line, and drain point in the floor near the Processor
	Customer:	“Open” connection of the Processor waste water into the drain point
Exhaust Venting of the 180 LP or LPS Processor	Customer:	Access to a building exhaust system or point for connection to the Processor exhaust
	Customer:	Connection of the Processor exhaust to the building exhaust system
	Customer:	The building exhaust system connected to the Processor <u>must</u> be running at <i>all</i> times and provide the negative static pressure specified on Page 34

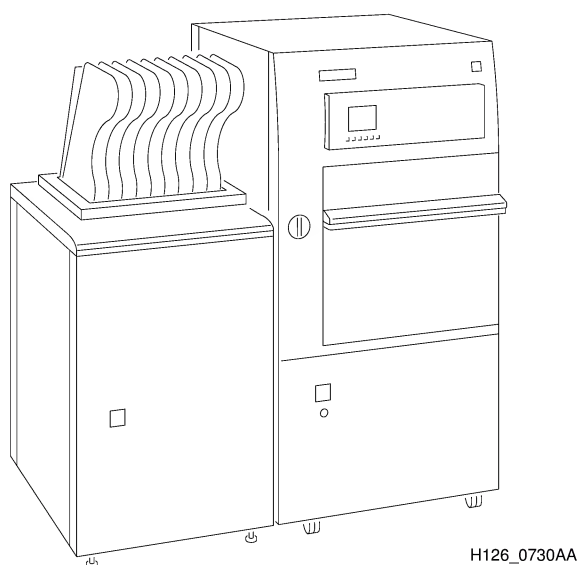
Section 3: Introduction

General Description

The *Kodak Ektascan 2180* Laser Printer is designed for optimum performance and image quality when used with *Kodak Ektascan* HN or HNC Laser Imaging Film.

A *Kodak X-Omat* 180 LP or LPS Processor may be attached to the Laser Printer. The 180 LPS Processor is a 180 LP Processor that has the *Kodak X-Omat* 180 LP Sorter Kit installed at the factory. The Sorter allows films to be automatically collated at the Processor. The Sorter has 9 bins with the capacity to hold a maximum of 50 sheets of film each and accepts all film sizes, including mixed film sizes.

Figure 3–1 **The *Kodak Ektascan* 2180 Laser Printer and *Kodak X-Omat* 180 LP or LPS Processor**



Section 4: Dimensions and Weights — Printer Only

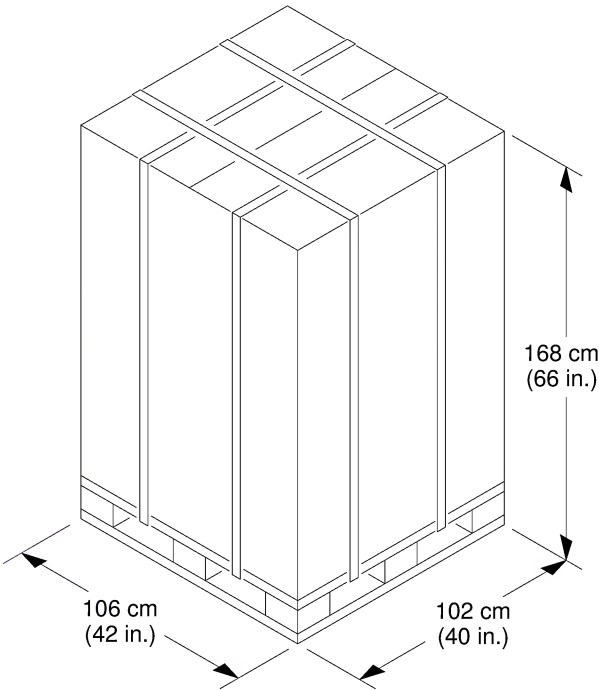
Printer Dimensions and Weight

Kodak Ektascan 2180 Laser Printer Supply and Receive Magazines and other accessories are packaged separately.

Table 4–1 Dimensions and Weights of the Laser Printer

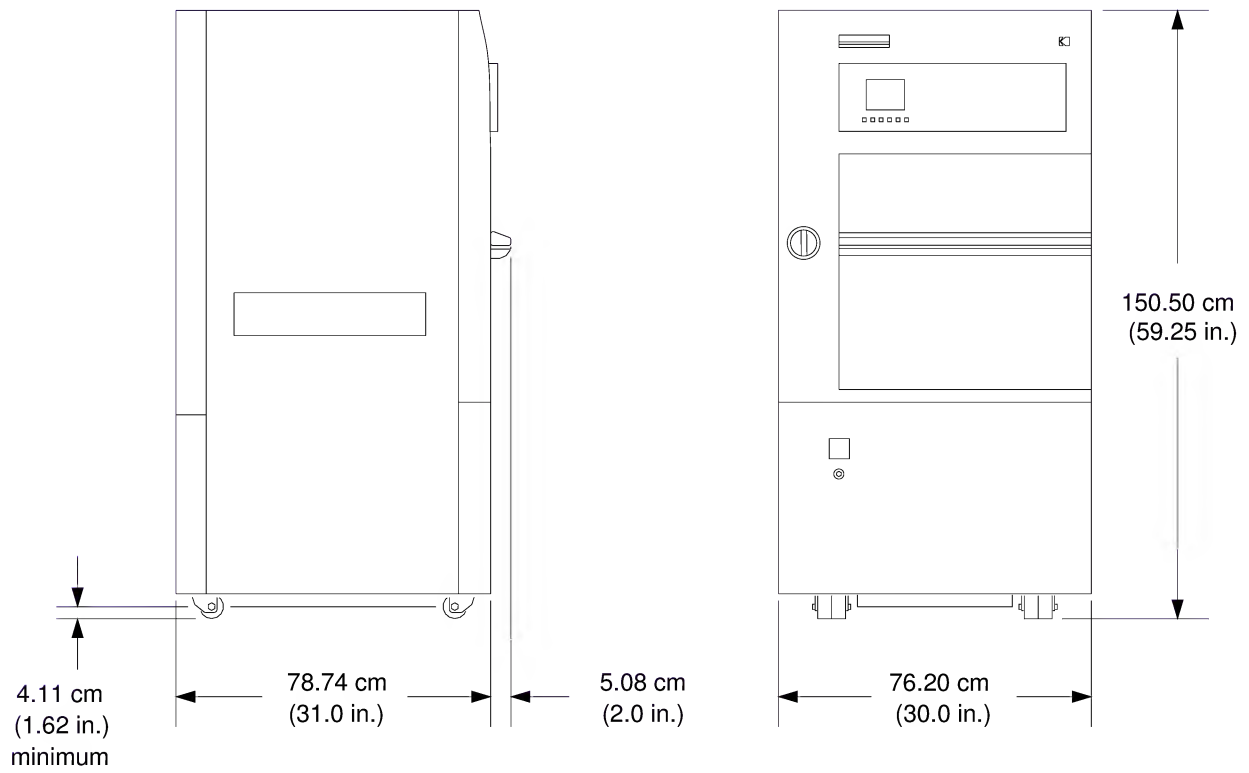
Description	Crated	Basic Printer
Width	106 cm (42 in.)	76.20 cm (30 in.)
Depth	102 cm (40 in.)	78.74 cm (31.0 in.)
Height	168 cm (66 in.)	150.50 cm (59.25 in.)
Weight	462 kg (1020 lb)	363 kg (800 lb)

Figure 4–1 Dimensions of the Crated Laser Printer



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Figure 4-2 Dimensions of the Unpacked Laser Printer



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For recommended clearances, see the section that starts on Page [37](#).

Section 5: Support Items — Printer Only

Film

The *Kodak Ektascan* 2180 Laser Printer uses *Kodak Ektascan* HN or HNC Film. This film is designed exclusively for helium neon and visible-light, solid-state laser imaging, and is available in the following sizes:

35 x 43 cm

35 x 35 cm

11 x 14 in.

8 x 10 in.

Supply Magazines

This Printer requires a film Supply Magazine to operate. The Supply Magazine can be configured for any of the 4 different sizes of film and can be used with roomlight or darkroom-loaded film packages. Darkroom-loaded film should be inserted in a Carrier Board, which is available from Kodak. Contact your Kodak sales or service representative for details.

Receive Magazine

A film Receive Magazine is available for Printer operation and accepts all 4 film sizes, including any mixture of sizes.

Image Memory

The Laser Printer requires at least one memory Circuit Board. Each memory Circuit Board holds 6 megapixels of data. Installation of up to 4 Circuit Boards provides a maximum of 24 megapixels of usable image memory. The maximum format desired and image size determines the number of Boards required.

In addition, an Image Buffer is available to allow continuous image storage from multiple inputs and to reprint pages previously stored in the Laser Printer.

Input Packages

Listed below are the input packages available to accommodate different imaging devices.

Note

All input packages include interfaces and accessories (such as Keypad and Cables) to support a connection to an imaging device. All connections greater than 45 metres (approximately 150 feet) and Keypad connections greater than 60 metres (approximately 200 feet) will require an extra charge. Please contact your Kodak sales representative for details.

Video

For the keypad mode, the 2180 Laser Printer supports:

- video cable up to 250 metres
- a Footswitch, a Keypad, and Keypad Cable up to 250 metres

For the autofilming mode, the 2180 Laser Printer supports:

- an auxiliary Keypad or Control Terminal and 15-metre cable
- video cable up to 250 metres, necessary serial control cable up to 250 metres

Digital

For the keypad mode, the 2180 Laser Printer supports:

- a Footswitch, a Keypad, and Keypad Cable up to 250 metres
- necessary digital data cable up to 250 metres

For the autofilming mode, the 2180 Laser Printer supports:

- an auxiliary Keypad or Control Terminal and 15-metre cable
- necessary serial and digital data cables up to 250 metres

Control Terminal

The optional Control Terminal allows an operator to execute Printer functions that may **not** be included in host-controlled autofilming.

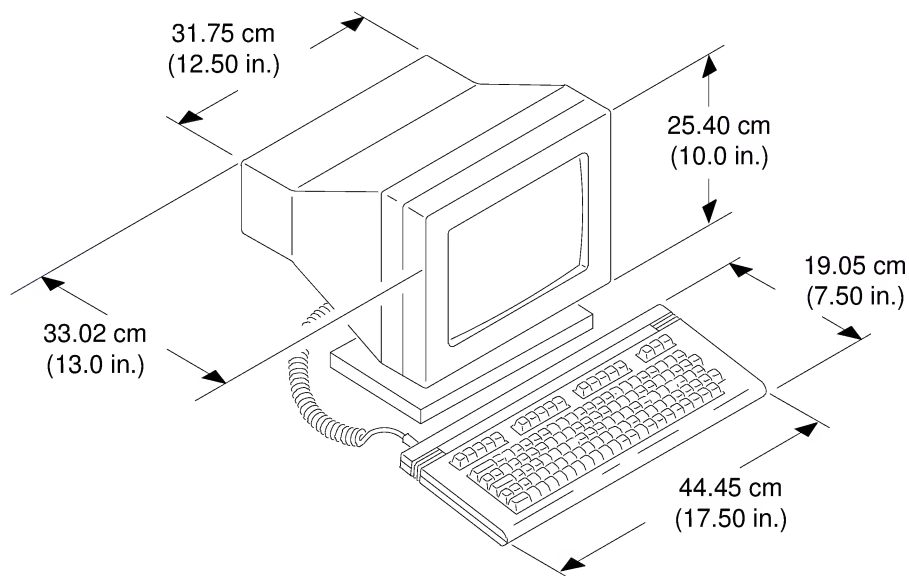
The Control Terminal comes with a 15-metre (50 ft) cable to connect the Control Terminal to the printer.

The Control Terminal comes with a 1.80-metre (6-foot Power Cord). A grounded power outlet is necessary to accommodate the 3-prong plug of the Power Cord.

Power requirements for the Control Terminal are:

- 90 to 264 V
- 47 to 63 Hz
- 1.0 amp, average

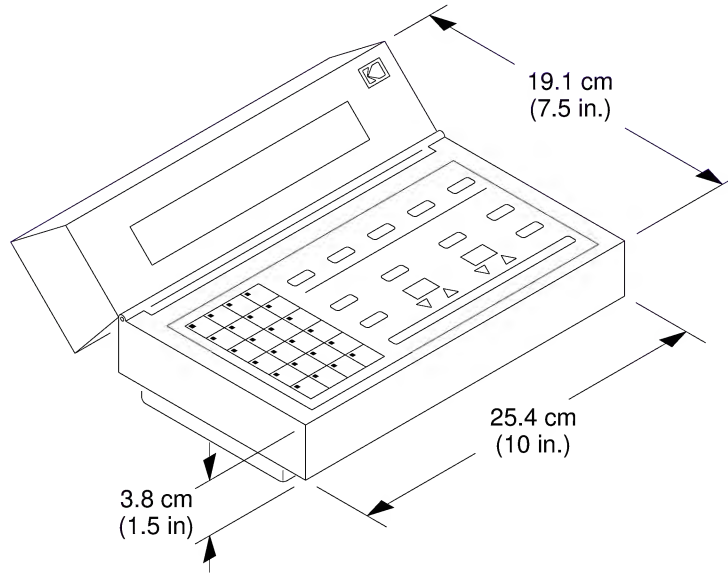
Figure 5–1 **Control Terminal**



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Keypad

Figure 5-2 The Keypad for the 2180 Laser Printer



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Densitometer

The densitometer is built-in and is located on the door of the Laser Printer.

Section 6: Environmental Requirements — Printer Only

Temperature	Operating: 15 to 30°C (59 to 86°F)
Relative Humidity	Operating: 15 to 60%
Altitude	Maximum of 2400 m (8000 ft) above sea level
Magnetic Field	Operating: Outside the 5 mT (50-gauss) line on the MRI fringe field plot for site Servicing: Outside the 0.5 mT (5-gauss) line on the MRI fringe field plot for the site
Lighting	For convenience and safety, all areas around the <i>Kodak Ektascan 2180 Laser Printer</i> should be illuminated with normal lighting of approximately 60 ftc (646 lx). Light levels may be as high as 100 ftc (1076 lx) at the top surface of the Laser Printer.
Floor Surface	The type of flooring on which the <i>Kodak Ektascan Laser Printer</i> is installed may affect its performance. A hard, firm surface is recommended. On hard flooring (wood, hard tile, or smooth concrete), the <i>Kodak Ektascan 2180 Laser Printer</i> can be rolled on its Casters and easily placed in position. On “Computer Room” raised floors, the Laser Printer Casters should be located directly over floor supports if possible. If the Laser Printer is to be located on a carpet, an antistatic pad is required.
Airflow	To allow adequate airflow around the Laser Printer, provide at least 15 cm (6 in.) of clearance at the back of the Laser Printer. See Page 37 . The area in which the Laser Printer is located should have at least 10 total air exchanges per hour, with at least 2 per hour of those being outside air.
Heat	The Laser Printer produces approximately 5300 kJ/hour (5000 Btu/hour) in normal use.
Access	Operating: 90 cm (36 in.) at the front of the printer to allow space for an operator when a Drawer is extended. If the Laser Printer is to be located on a carpet, an antistatic pad is required. Servicing: 90 cm (36 in.). Do not set items other than the Control Terminal on top of the Laser Printer. Storing items beside and behind the Laser Printer can hinder or delay servicing. For more information on clearances, see the section that starts on Page 37 .
General Placement	The <i>Kodak Ektascan 2180 Laser Printer</i> must be farther than 3 metres (10 ft) from a patient contact area.

Section 7: Electrical Requirements — Printer Only

Agency Listings

The Laser Printer has the following Agency listings —

- UL Listed (#122, 3rd edition)
- CSA Certified (C22.2, #950)
- TUV Licensed to EN 60 950 (Information Technology Equipment) when cord connected to a power source
- TUV Licensed to IEC 601-1 (Medical Equipment) when hard wired to a power source. It is the customer's responsibility to do the hard wiring.
- FCC Approved (47 CFR, Part 15, Subpart B, Class A limits)
- Post Vfg 243 Class B Approved
- EN55022 Class A
- DOC ICES-003

Electrical Specifications



Important

All electrical services, **including earth ground**, must comply with local and national electrical codes.

Table 7–1 Site Power Requirements

Voltage (volts)	Current (Amps)	Frequency (Hz)	Service
100 V 10%	15	50/60	3-wire, single phase
120 V +6%, -13%	15	60	3-wire, single phase
120 V 10%	15	60	3-wire, single phase
220 V 10%	10	50/60	3-wire, single phase
230 V 10%	10	50/60	3-wire, single phase
240 V 10%	10	50/60	3-wire, single phase

Reconfiguration of the Laser Printer is necessary to utilize these voltages.

The Power Cord supplied with the Laser Printer is a standard NEMA power plug (5 - 15 p, UL), 6 ft. The Power Cord for IPO Units is a European plug, type CEE 7 VII. Laser Printers installed in Japan receive the U.S. Power Cord.

Generic Site Electrical Specifications



Important

Failure to comply with these site electrical specifications could void the customer's warranty.

The customer is responsible for purchasing and installing:

- Any power conditioning equipment, including filters, isolation transformers, uninterruptable power supplies, and isolated grounding systems
- A static mat, if the site is carpeted

The system requires that:

- All electrical power circuits come from the same distribution panel
- All electrical power circuits provide an isolated ground
- The electrical system meets the National Electrical Code Section 250-74, Exception 4*. The distribution panel must have isolated ground buses to eliminate electrical noise between ground and neutral and between ground and hot. The ground bus must have the same current carrying capability as the hot and neutral conductors.
- Resistance on the wires between the service entrance and receptacles (ground and neutral) to be less than 0.2 ohms
- Power to be free of disturbances:
 - Impulses no greater than 100 V peak over normal line voltage
 - Wave shape distortions no greater than 5% from a nominal wave
 - The quality and reliability of the power source is often dependant on the geographic location of the site. Some sites where power quality is exceptionally poor may require special power conditioning equipment to ensure that the tolerances are maintained within acceptable limits.

The receptacles must be single phase, 3-wire branch, CSA approved and labeled "VW-1 and CSA" with an isolated grounding conductor NEC, Section 250-74, Exception 4*, and orange in color.



Warning

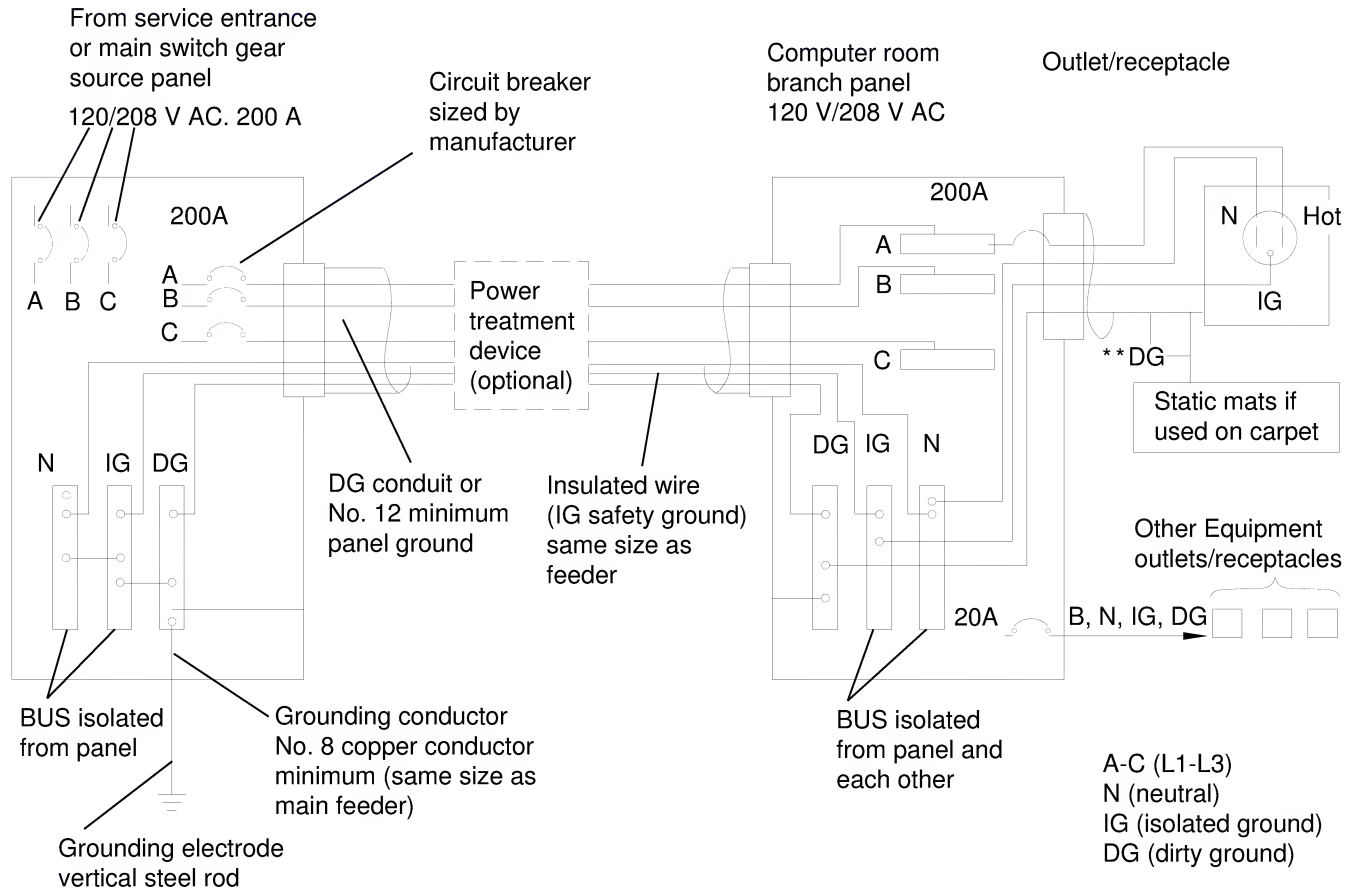
- Never use extension cords.
- Never cut or remove the ground prong from the Power Cord.

* **Exception 4: Connecting Receptacle Grounding Terminal to Box.** Where required for the reduction of electrical noise (electromagnetic interference) on the grounding circuit, a receptacle in which the grounding terminal is purposely insulated from the receptacle mounting means shall be permitted. The receptacle grounding terminal shall be grounded by an insulated equipment grounding conductor run with the circuit conductors. This grounding conductor shall be permitted to pass through one or more panelboards without connection to the panelboard grounding terminal as permitted in Section 384-20, Expection, so as to terminate directly at an equipment grounding conductor terminal of the applicable derived system or service.

Recommended Wiring Practices

Wire a separate dedicated-branch circuit for the 2180 Laser Printer. Not only does this prevent overloading and tripping breakers, it also helps isolate the Laser Printer from the noise and transients caused by electrical appliances and equipment, which can affect the integrity of the data. See Figure 7-1 below.

Figure 7-1 Recommended Wiring Practices



- Chained Neutrals/Grounds are not allowed. Each receptacle must have a separate neutral and ground.
- Noise-generating equipment should be terminated on the dirty ground bus.
- Only equipment requiring an isolated Ground should be attached to an isolated Ground Bus.
- Neutral to Ground bond should be located only in the main panel or at a newly derived source (e.g., transformer).

** Conduit or No. 12 minimum panel ground

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Cables

It is the responsibility of the customer to have all cables installed prior to the installation of the Kodak Ektascan 2180 Laser Printer. See the table on Page [20](#).

Each imaging device has unique and different requirements for cables and cable connectors and the routing of those cables. Imaging devices provide a video or digital image data output.

An additional 2.50 to 3 metres (8 to 10 ft) of cable should be provided for both power and signal lines. This allows for moving the *Kodak Ektascan 2180 Laser Printer* for service and maintenance.

If a conduit is used, provide a ground connection between the frame ground terminal of the Laser Printer and the conduit shell.

Cables are available from Kodak or the imaging device manufacturer. Consult your Kodak representative for details.



Important

- Video cable length may be restricted for some high-resolution, high-frequency video signals. Consult your Kodak representative for details.
- For RS-232 cables greater than 60 m (200 ft), use a Keypad Cable to transport the signal between the imaging device and the Laser Printer.
- Coil up any excess cable.
- All cables, **except** the non-plenum Keypad Cables and the Control Terminal Cable, come with removable connectors. See your Kodak sales representative for more information.
- Consult your Kodak sales representative to determine if the cables supplied by Kodak are plenum or non-plenum cables.

Cables for the 2180 Laser Printer			
Cable Type	Length	Removable Connector	
		Type	Size (larger end)
Keypad	15 m (50 ft)	DB 15	47.6 x 15.9 mm (1 ⁷ / ₈ x ⁵ / ₈ in.)
	30 m (100 ft)		
	45 m (150 ft)		
	60 m (200 ft)		
Video	15 m (50 ft)	BNC, standard	19.1 mm (³ / ₄ in.) Round
	30 m (100 ft)		
	45 m (150 ft)		
Parallel Data (RS-485)	30 m (100 ft)	DB 37	69.9 x 15.9 mm (2 ³ / ₄ x ⁵ / ₈ in.)
	60 m (200 ft)		
	125 m (410 ft)		
	180 m (590 ft)		
	250 m (820 ft)		
Serial Control (RS-422)	30 m (100 ft)	DB 37	69.9 x 15.9 mm (2 ³ / ₄ x ⁵ / ₈ in.)
	60 m (200 ft)		
	125 m (410 ft)		
	180 m (590 ft)		
	250 m (820 ft)		
Serial Control (RS-232)	30 m (100 ft)	DB 25	54.0 x 15.9 mm (2 ¹ / ₈ x ⁵ / ₈ in.)
	60 m (200 ft)		
	125 m (410 ft)		
	180 m (590 ft)		
DV	15 m (50 ft)	DB 25	60.0 x 15.9 mm (2 ³ / ₈ x ⁵ / ₈ in.)
	30 m (100 ft)		
Control Terminal (See Page 13 .)	15 m (50 ft)	DB 25	54.0 x 15.9 mm (2 ¹ / ₈ x ⁵ / ₈ in.) Not Removable

Note

All the Connectors on the Laser Printer are female. Connect the **male end** of Cables to the Laser Printer.

Video Signal Cables. *Kodak Ektascan* For the video signal to the Laser Printer, a direct connection to the imaging device computer is best. If a direct connection is not possible, the signal should come from the same signal source as the one going to the workstation monitor. The customer of the Laser Printer must install this cable, available from Kodak in various lengths. The cable is plenum-rated. The Kodak service representative will install male BNC connectors on both ends.

Pixel Clock Cable. A separate cable may be necessary for this timing signal. The cable, available from Kodak in various lengths, must also be run by the customer to the Laser Printer. The cable is plenum-rated. The Kodak service representative will install male BNC connectors on both ends. Not all imaging devices provide this output signal. Consult your local Kodak representative for further details. It is not necessary to install video cable purchased from Kodak through a conduit or channel. Certain municipalities or local codes, however, may require the use of conduit.

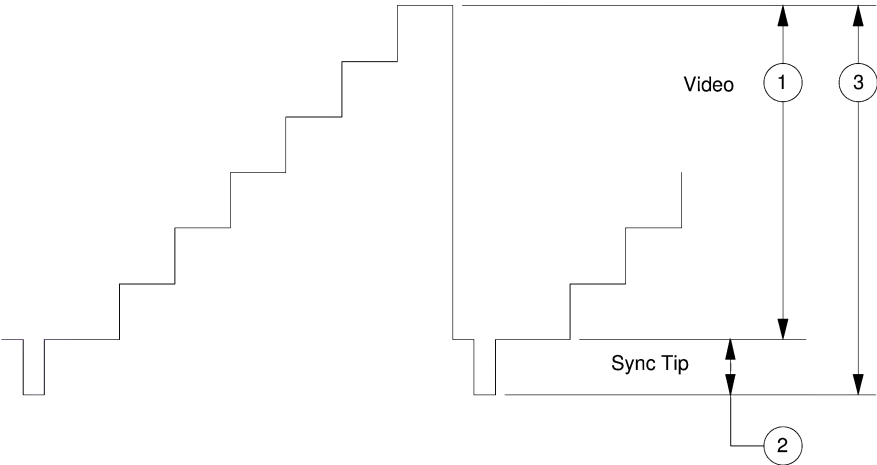
Keypad Cable purchased from Kodak in various lengths, has a 15-pin connector housing, 1⁷/₈ in. x 5⁵/₈ in., on both ends. The male end connects to the Laser Printer, and the female end connects to the Keypad located at the device workstation.

Kodak Ektascan Cable Extension Kits are available to extend video signals and keypad control signals from the Keypad. **Do not shorten or lengthen** the cables that come in the Cable Extension Kits. Consult your Kodak representative.

Cable Extension Kits		
Channels	Length	Model
one	125 m (410 ft)	1125
one	250 m (820 ft)	1250
two	125 m (410 ft)	2125
two	250 m (820 ft)	2250

Video Signal Requirements for Units Interfaced to a Video Source

- Video Signal Amplitude: 0.6 volts minimum/1.5 volts maximum
- Sync Amplitude: 0.1 volts minimum/0.5 volts maximum
- Composite Signal: 0.7 volts minimum/2.0 volts maximum
- Pixel Clock: 9 MHz minimum/128 MHz maximum
- Either interlaced or non-interlaced



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Section 8: Information for the Optional 180 LP or 180 LPS Processor

Dimensions and Weight — LP and LPS Processors

Figure 8–1

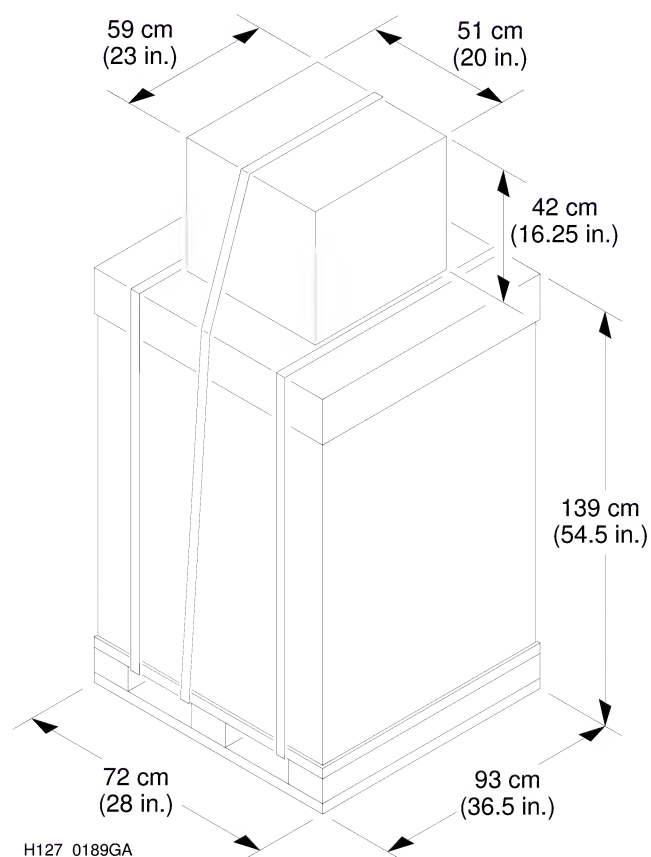
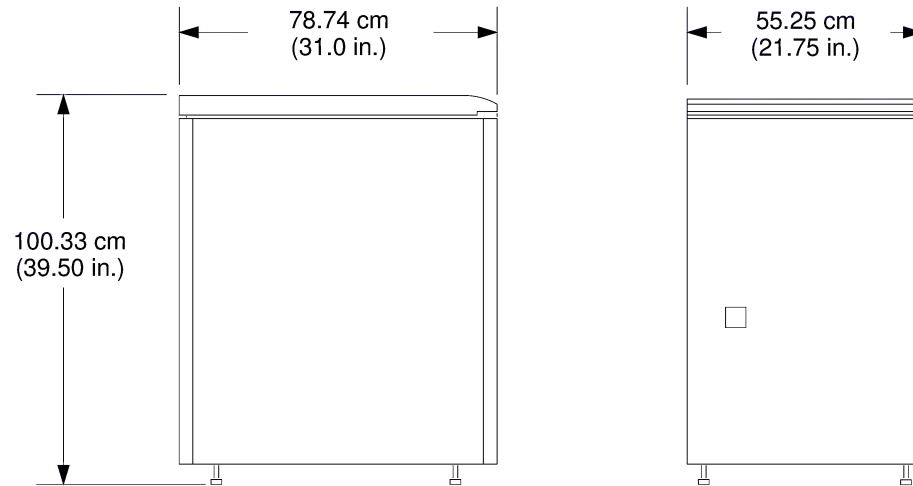


Table 8–1 Dimensions of the Crated Processor with the Crated Sorter

Description	Crated	Uncrated
Width	72 cm (28.0 in.)	55.25 cm (21.75 in.)
Depth	93 cm (36.5 in.)	78.74 cm (31.0 in.)
Height, 180 LP	139 cm (54.5 in.)	100.33 cm (39.50 in.)
Height, 180 LPS	181 cm (70.75 in.)	133 cm (52 in.)
Height, Sorter	42 cm (16.25 in.)	33 cm (13 in.)
Weight (empty)	165.0 kg (368 lb)	131.5 kg (290 lb)
Weight (full of solutions)	N/A	150.6 kg (332 lb)

Figure 8-2 Overall 180 LP or LPS Processor Dimensions

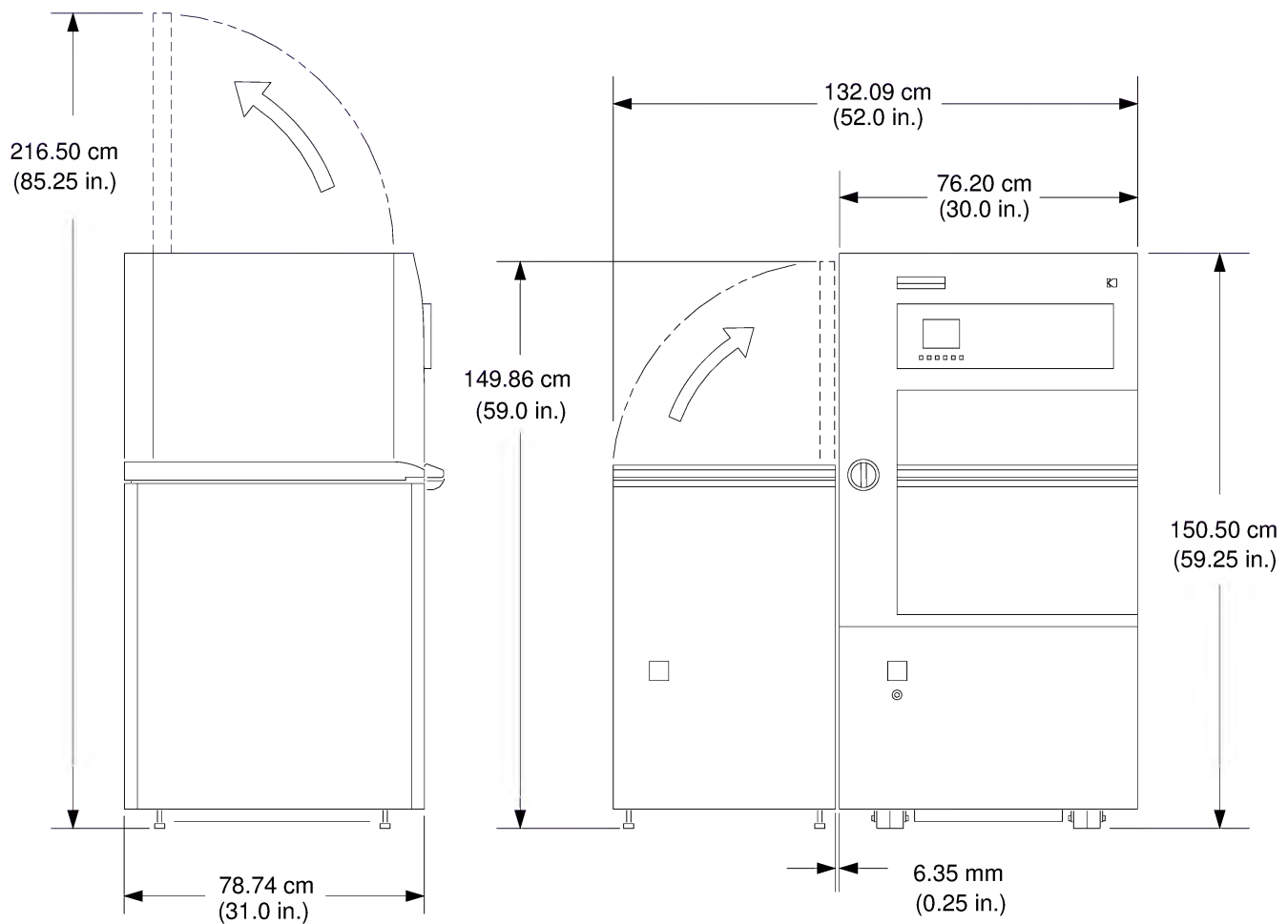


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Note

The Sorter is 33 cm (13 in.) high. See the table on Page [22](#).

Figure 8–3 Physical Dimensions of the *Kodak Ektascan 2180* Laser Printer and the *Kodak X-Omat 180 LP or LPS* Processor



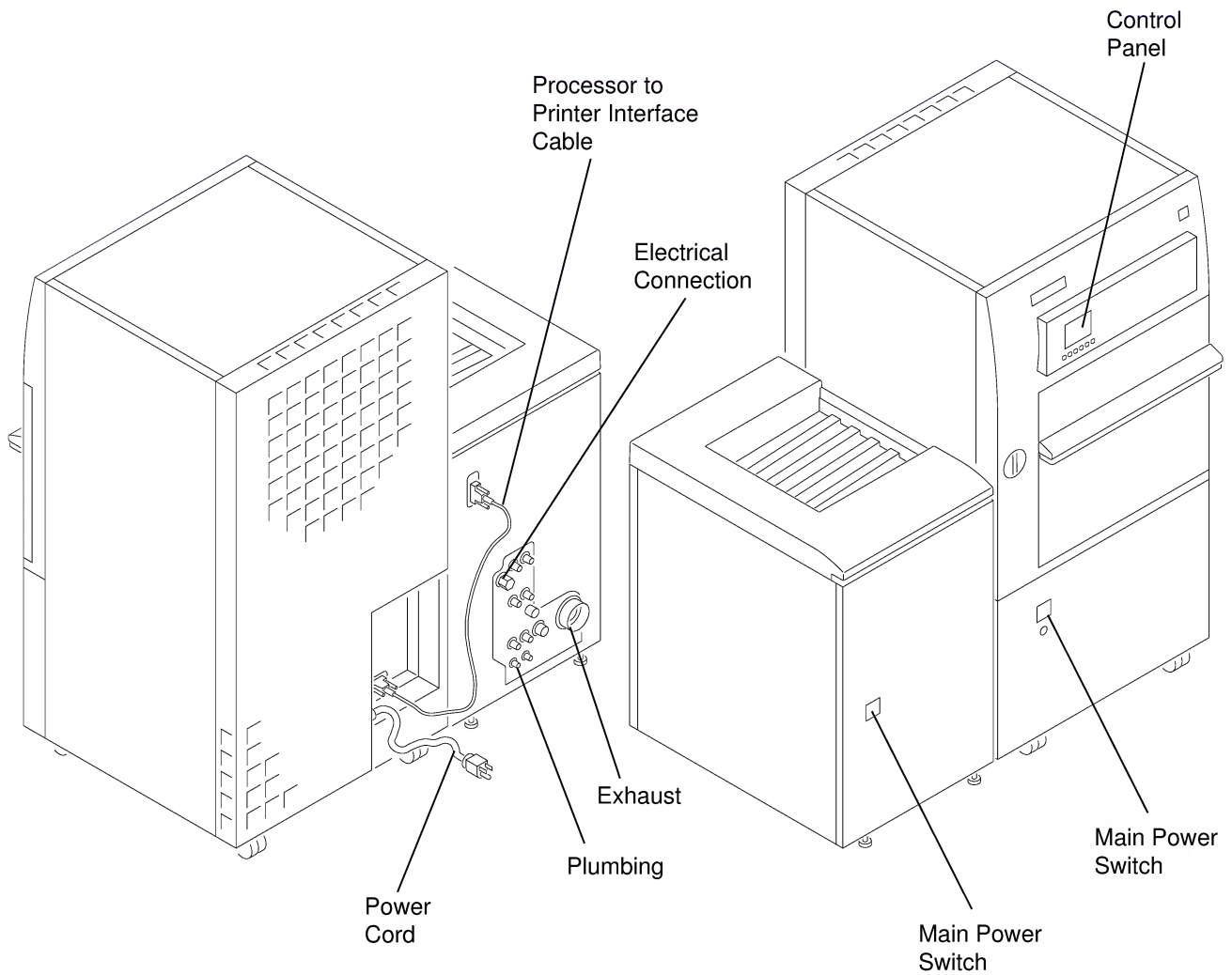
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Note

Some service procedures require a top clearance of 76.20 cm (30 in.).

Front and Back Views

Figure 8-4 Front and Back View of the *Kodak Ektascan 2180* Laser Printer and the *Kodak X-Omat 180 LP or LPS Processor*



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Processor Accessories

Kodak supplies a full line of processor accessories. Consult your Kodak sales representative or medical x-ray film dealer for more information. The following is a partial list of accessories available:

- *Kodak X-Omat* 180 LP Sorter Kit
- *Kodak* Chemical Recovery Cartridge, Model II
- *Kodak* Processing Chemicals
- *Kodak* Auxiliary Ventilation Fan Kits
- *Kodak* Automixer II
- *Kodak* Developer-Fixer Replenisher Tank Sets

Processor Venting

It is important to adhere to the site specifications for venting of Processors to ensure proper performance for both the Laser Printer and the Processor. The Processor must be connected to the building exhaust system, which must be connected to outside air and provide a minimum of 10 total air changes per hour.

Correct negative static pressure in the exhaust vent reduces the potential of corrosive fumes entering the Laser Printer. With the Processor operating, air must enter the feed area of the Processor. If such airflow is **not** present, **do not dock** the Laser Printer to the Processor. See Page [33](#).

Access

Work space is necessary for operation, maintenance, and service. For **servicing** the Processor, the recommended clearance between the Processor and a room wall is 60 cm (24 in.). Less clearance may make service difficult. See Pages [41](#) and [42](#).

Seismic Kit

See Page [44](#).

Magnetic Field

Operating and Service: Outside the 0.5 mT (5-gauss) line on the MRI fringe field plot for the site.

Agency Listings

The Processor has the following Agency listings —

- UL Listed (#122, 3rd edition)
- CSA Certified (C22.2, #950)
- TUV Licensed to EN 60 950
- FCC Approved (47 CFR, Part 15, Subpart B, Class A limits)
- Post Vfg 243 Approved
- EN55022 Class A
- DOC ICES-003
- VCCI Type 1 Approved

Basic Electrical Requirements — Processor Only

- Amperage: 30 A, single-phase; **or** 20 A, three-phase
- single-phase 2-wire; **or** 3-phase 3- or 4-wire service
- earth ground



Important

All electrical services, **including earth ground**, must comply with local and national electrical codes.

Table 8–2 Service Options

Voltage (volts)	Frequency (Hz)	Service
200	50/60	2-wire, single phase
220	50/60	2-wire, single phase
230	50/60	2-wire, single phase
240	50/60	2-wire, single phase
100/200	50/60	3-wire, single phase
120/240	60	3-wire, single phase
120/208	60	3- or 4-wire, 3-phase*
127/220	50	3- or 4-wire, 3-phase*, wye
220/380	50	3- or 4-wire, 3-phase*, wye
230/400	50	3- or 4-wire, 3-phase*, wye
240/415	50	3- or 4-wire, 3-phase*, wye
200/200	50/60	2- or 3-wire, 3-phase*, delta



Note

L1/L2/N or L1/L2/L3/N may be used. L1/L2 or L1/L2/L3 may be used.

* L1, L2, and Neutral used in this configuration are sometimes referred to as Single Phase Connections.

Main Power Disconnect (not supplied)

A main power disconnect switch consisting of a 2-pole for single-phase or 3-pole for 3-phase thermomagnetic circuit breaker with solid neutral and common trip or a fused disconnect switch must be:

- located on a wall adjacent to the Processor
- visible and accessible from the site of the Processor
- a safe distance from water

Water Requirements



Important

- Connection parts are not furnished by Kodak.
- Water supply and plumbing must comply with local codes; iron piping is **not** recommended.
- The water supply may be located on either side of the Processor and **must be** accessible.
- Recommended pipe size: 1/2 IPS.
- Tempered water is optional if the cold water temperature is within specified range.
- Tempered water service is suggested for cleaning the Processor and for mixing chemicals manually.
- If the upper limit of the room ambient temperature or the water supply temperature is exceeded, a water chiller may be required.

Temperature: 4.4 to 32.2°C (40 to 90°F). The wash water must be a minimum of 5.5°C (10°F) below the developer temperature setpoint to provide proper developer temperature control.

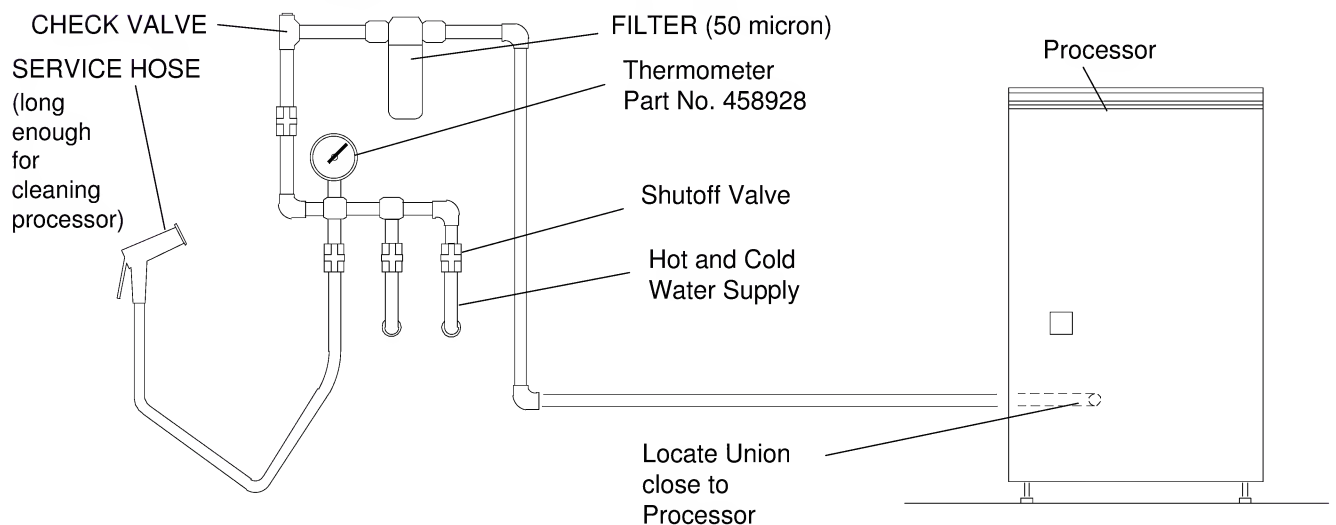
Pressure: 173 to 692 kPa (25 to 100 psi); Install a regulator if necessary. Water pressure in excess of 415 kPa (60 psi) causes increased noise levels in the Processor. If this increased noise is unacceptable, install a regulator and set to 346 kPa (50 psi).

Flow Volume: Controlled within the Processor to 2.850 L/min (3/4 gal/min), 15%.

Filtration: A 50-micron filter is required (not supplied by Kodak) in the input water line.

Check Valve: The Processor has an internal 20 mm (0.79 in.) water gap in the Wash Rack. A check valve (or vacuum breaker) should not be necessary; however, check and observe local codes.

Figure 8-5 Suggested Processor Water Supply



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Drain Requirements

Capacity:	15 L/min (4 gal/min)
Connection:	Minimum 7.6 cm (3 in.) diameter, corrosive resistant.

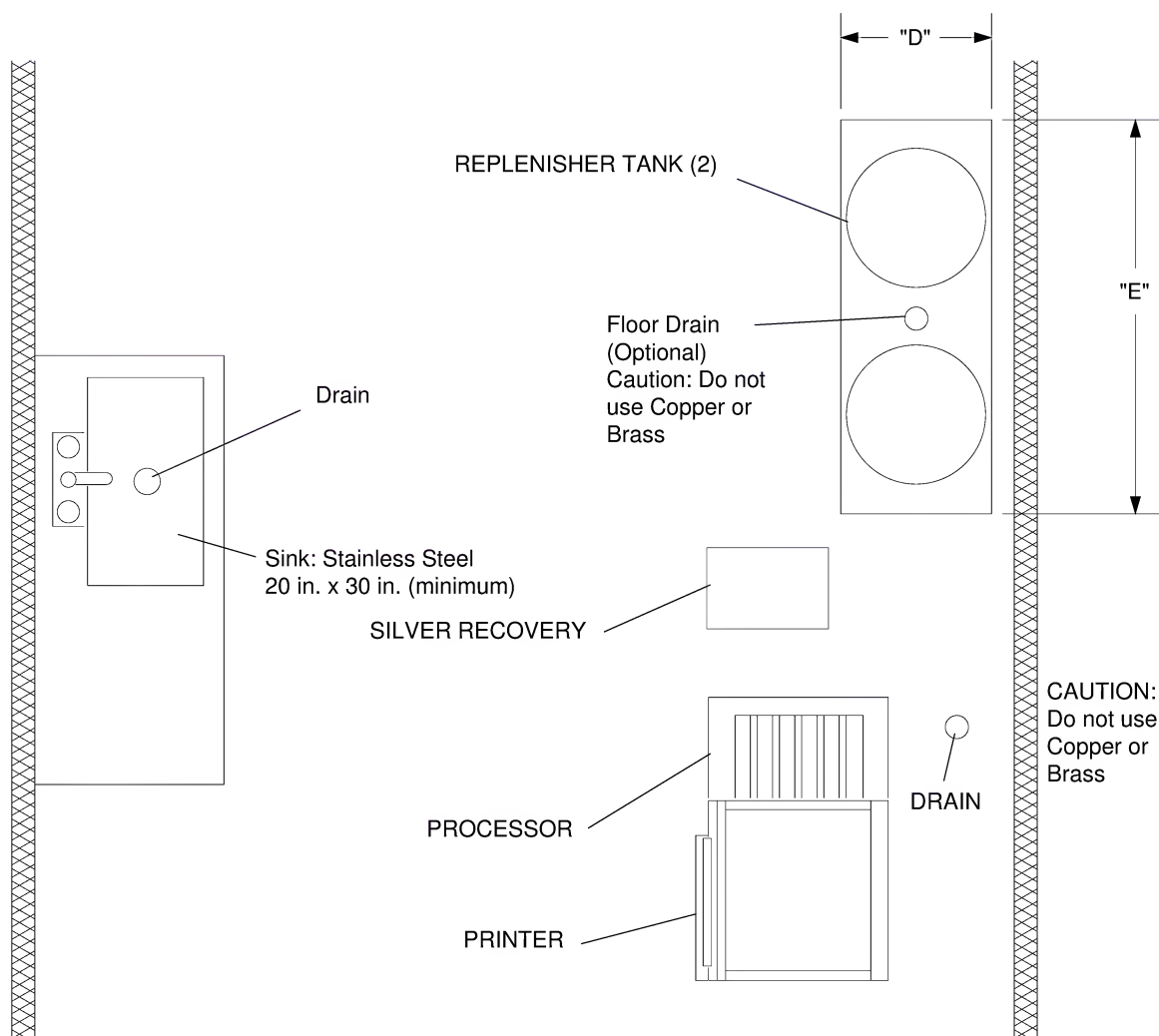


Warning

- Drains must be made of chemically resistant, non-corrosive material. Use PVC or the equivalent. Do not use copper or brass for the drain lines.
- The drain must have a minimum diameter of 7.6 cm (3 in.) and be free of obstruction.
- Drain service must comply with all local codes.
- Do not make a solid connection between the hoses and the drain.
- Locate the drain within 1.5 metres (60 in.) of the Processor.
- The drain line should slope gradually downward to the floor drain.

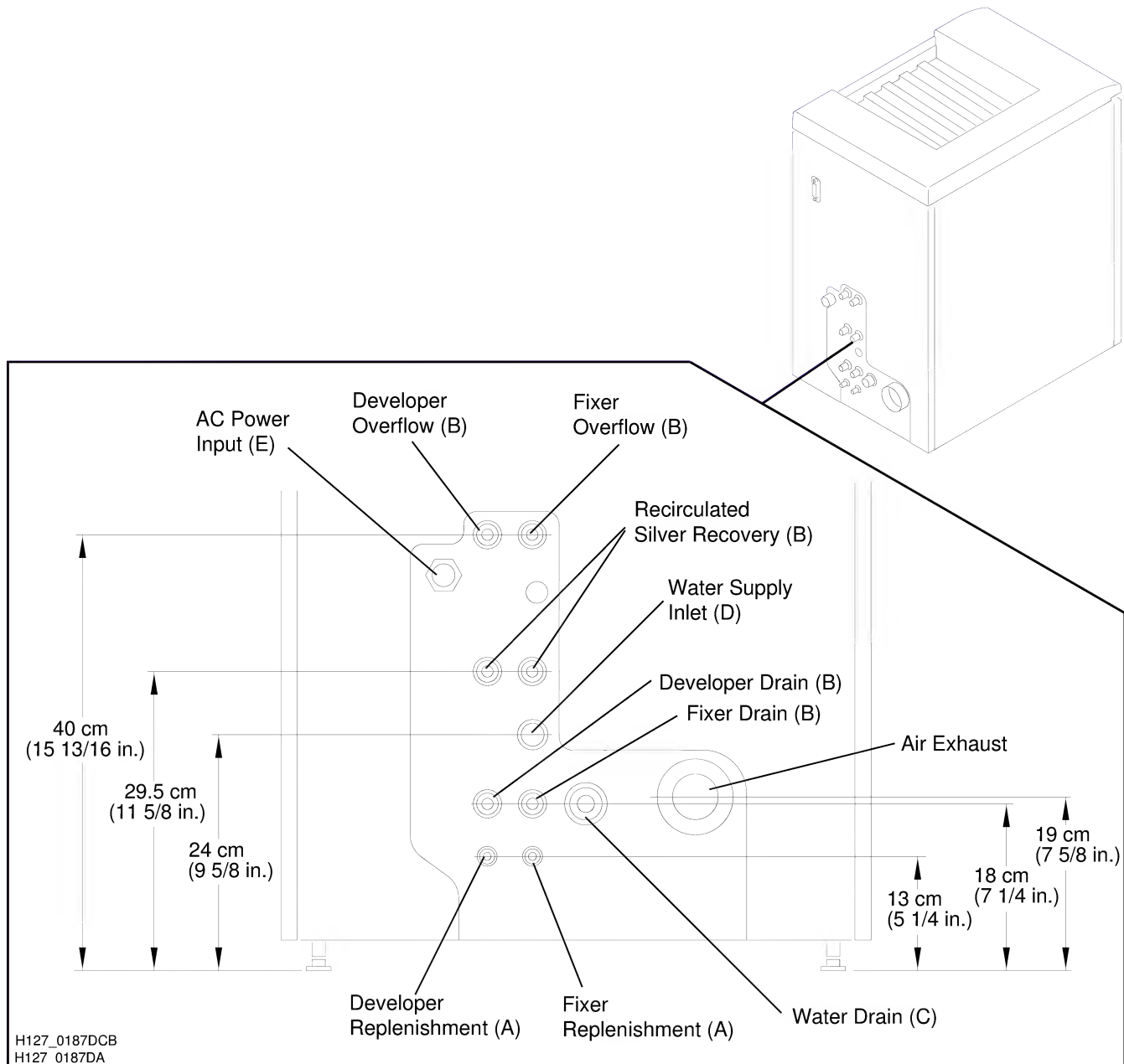
Room Layout

Figure 8–6 **Suggested Room Layout and Drain Locations.**
For dimensions “D” and “E”, see Page [31](#).



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Figure 8–7 Plumbing Connections



A	0.95 cm (3/8 in.) inner dimension, hose fitting
B	1.59 cm (5/8 in.) inner dimension, hose fitting
C	1 in., inner dimension hose fitting
D	3/8 in. female NPT coupling
E	7/8 in. inner dimension fitting for AC power input



Important

Be sure that the hoses coming from the Processor drains are kept lower than the drains, 18 cm (7 1/4 in.) from the floor.

Dimensional Requirements for the Replenisher Tanks

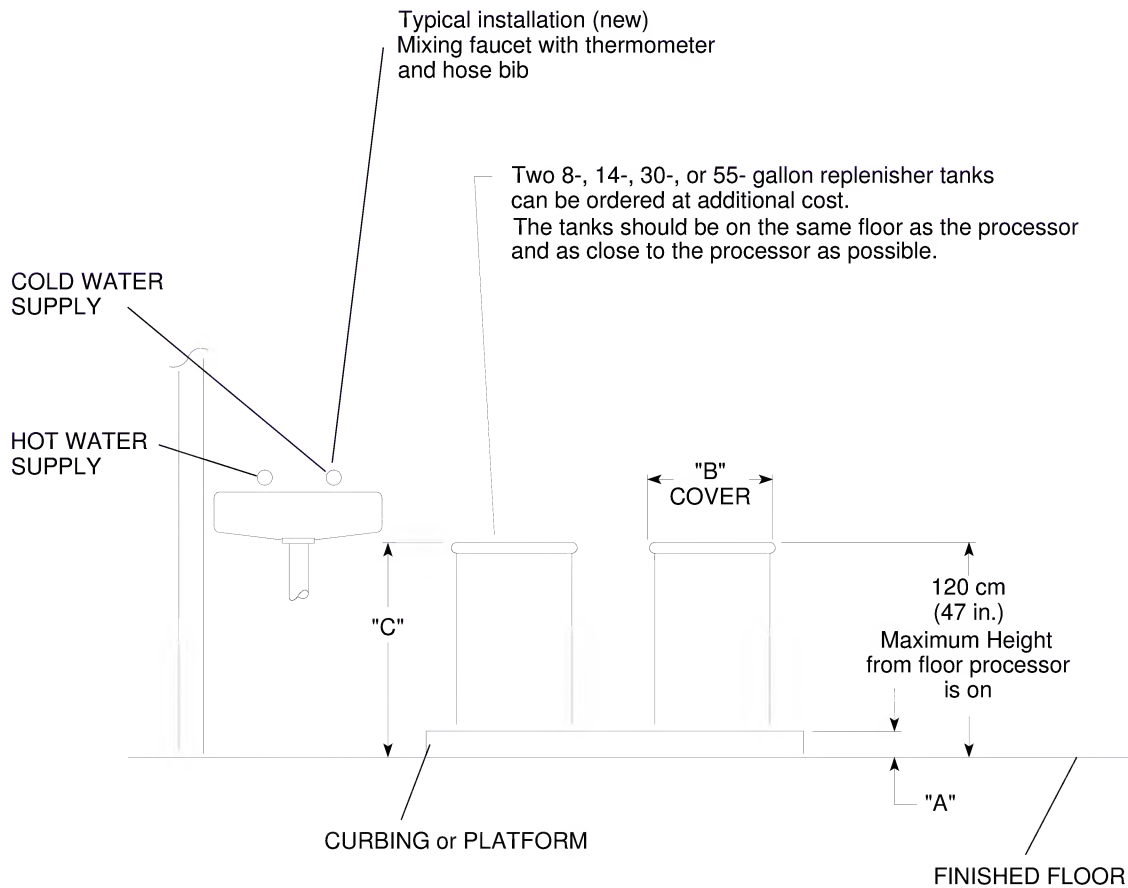
Description	Dimensions (See Page 32)	Replenisher Tank Size		
		14 Gallon	30 Gallon	55 Gallon*
Maximum Platform Height	"A"	61.0 cm (24 in.)	48.3 cm (19 in.)	27.9 cm (11 in.)
Diameter	"B"	43.2 cm (17 in.)	55.9 cm (22 in.)	61.0 cm (24 in.)
Tank Height	"C"	58.4 cm (23 in.)	70.5 cm (27 ³ / ₄ in.)	90.8 cm (35 ³ / ₄ in.)
External Replenisher Tank Area (See Page 29)	"D" x "E" (Minimum)	61.0 x 127.0 cm (24 c 50 in.)	61.0 x 152.4 cm (24 x 60 in.)	66.0 x 172.7 cm (26 x 68 in.)



Important

- * To prevent replenishment solutions from flowing through the Replenishment Pumps when using a 55-gallon Replenisher Tank, the level of replenishment solution in the tank must not exceed 120 cm (47 in.) from the floor that the Processor is on.

Figure 8–8 Suggested layout of Replenisher Tanks



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Note

For dimensions "A", "B", and "C", see Page [31](#).

Room Ambient Condition

- 15 C (59 F) to 30 C (86 F).
- 15 to 60% Relative Humidity.

Air and Heat

Air Exhaust (full load):

- Volume: 2 m³/min (75 ft³/min)
- Temperature: 66°C (150°F) maximum

Processor Exhaust Adapter:

- 7.6 cm (3 in.)

Heat load to room:

- 422 kJ/hr (4000 Btu/hr)

Venting

The *Kodak* Auxiliary Ventilation Fan Kit is available for use with all *Kodak* Processors to aid in meeting site specifications for ventilation. Improperly vented Processors may exhibit film artifacts and corrosion of internal metal parts and accessories. Install a Kit if ventilation is inadequate or marginal.

The Kit is available at Service Parts Management. Order according to volume requirements:

Part No. 264503 *Kodak* Auxiliary Ventilation Fan Kit / 110 V (operates on 110 V AC)

Part No. 8B7105 *Kodak* Auxiliary Ventilation Fan Kit (operates on 95 to 250 V AC, 47 to 63 Hz)



Important

The Fan must be connected to a building's exhaust system, which forces air to the outside of the building so that no air is reused.

Figure 8–9 **For More Ventilation, Install the Optional Auxiliary Ventilation Fan Kit**

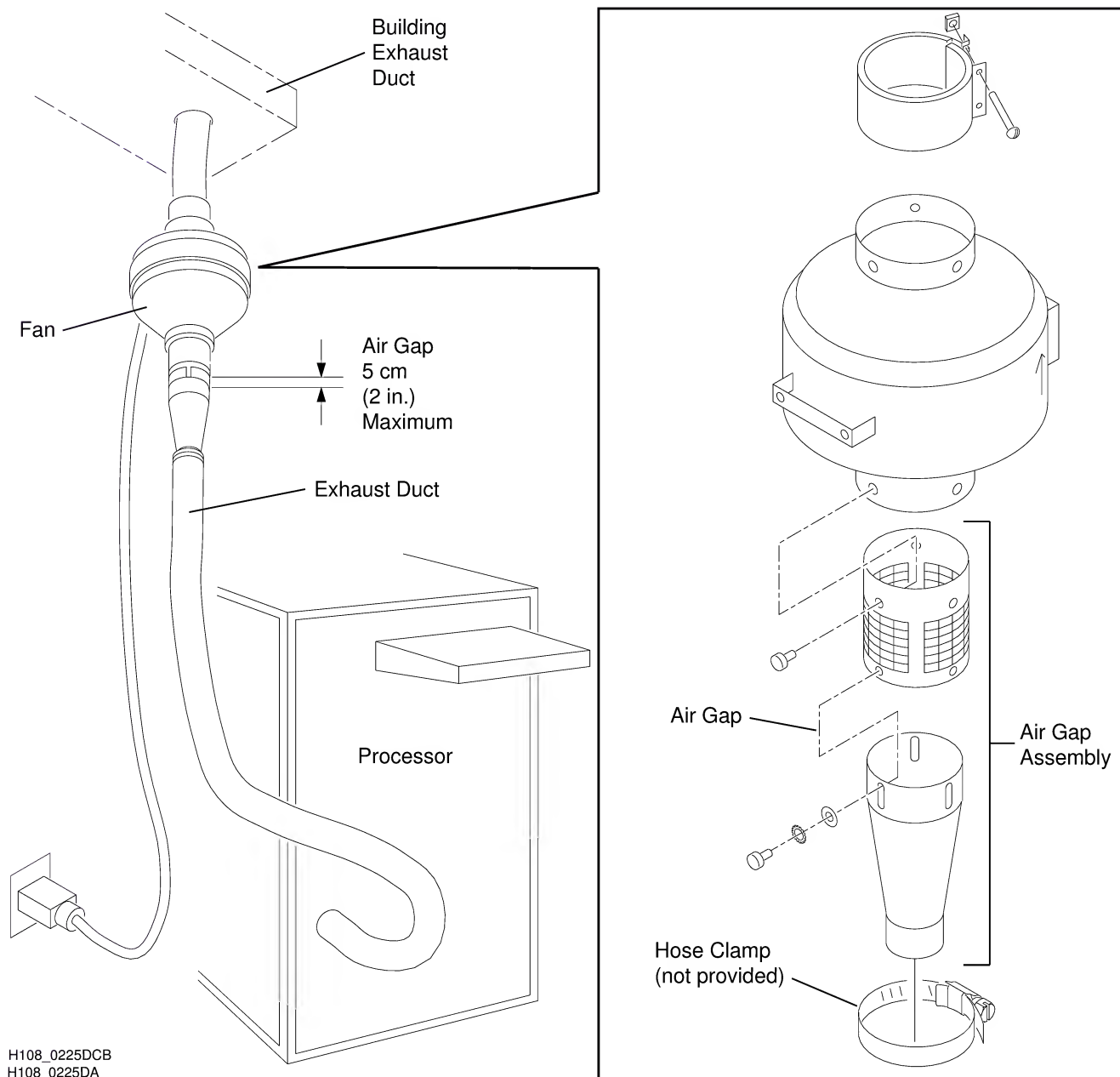
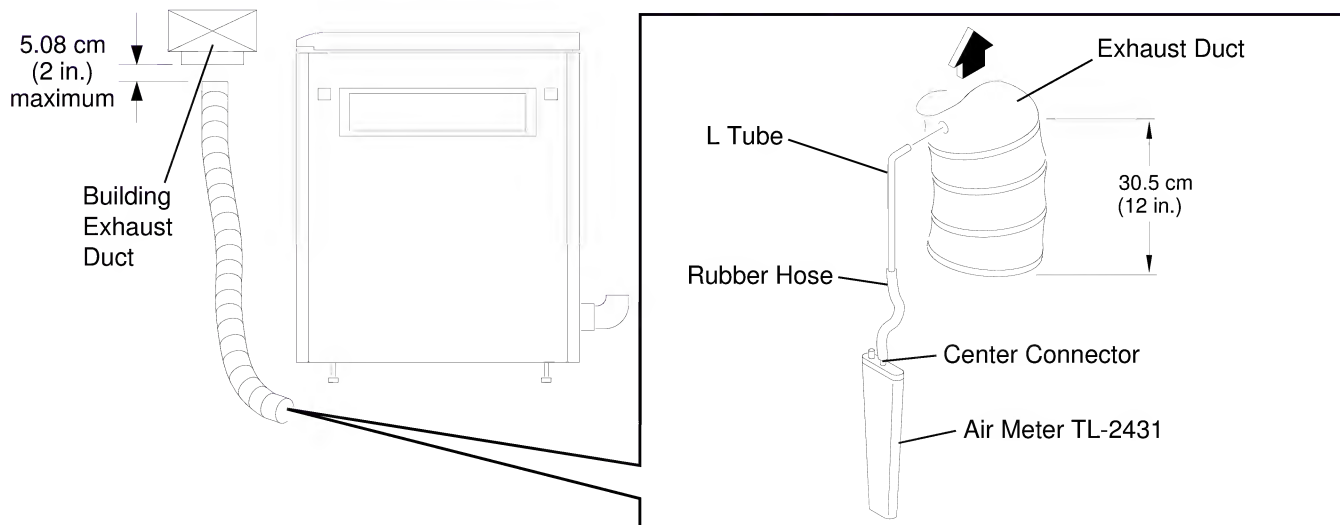


Figure 8–10 Measuring the Airflow with the Air Meter



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To measure the negative static pressure in the Building Exhaust Duct, do the steps below.

1. Before measuring the negative static pressure, check that the Processor (if installed) is turned off and that the Exhaust Duct is disconnected from the Processor.
2. Connect one end of the Rubber Hose, provided with the Air Meter TL-2431, to the L Tube, also provided with the Air Meter.
3. Connect the other end of the Rubber Hose to the Center Connector on the Air Meter.
4. Make a 6 mm (1/4 in.) hole approximately 30 cm (12 in.) from the end of the Exhaust Duct to be connected to the Processor.
5. Insert the L Tube into the hole made in the Exhaust Duct so that the end of the Tube is flush with the outside wall of the Exhaust Duct.
6. Check that there are no air leaks around the L Tube.
7. Hold the Air Meter vertically and read the pressure on the Air Meter.
8. See the table below to determine the correct negative static pressure. To obtain the correct negative static pressure, adjust the clearance between the Building Exhaust Duct and the Exhaust Duct from the Processor.
9. Remove the L Tube from the Exhaust Duct, and seal the hole in the Exhaust Duct.
10. To adjust the ventilation, try adjusting the Air Gap. If necessary, install an Auxiliary Ventilation Fan Kit, Part No. 264503 or 8B7105.

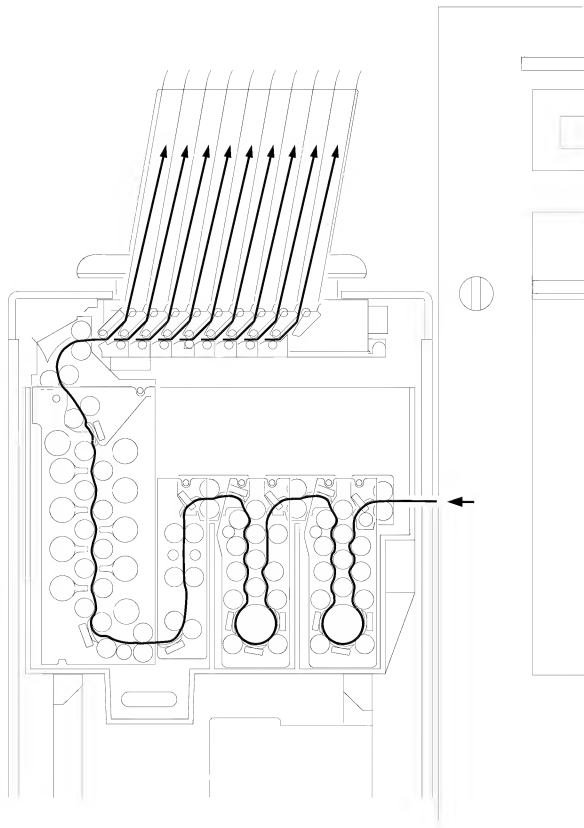
Measuring the Static Pressure		
Duct Diameter	Negative Static Pressure, Water Head	
	MIN	MAX
76 mm (3 in.)	0.76 mm (0.03 in.)	1.02 mm (0.04 in.)
102 mm (4 in.)	0.25 mm (0.01 in.)	0.51 mm (0.02 in.)

Section 9: Information on the 180 LP Sorter

Introduction

Kodak X-Omat 180 LPS Processors have a *Kodak X-Omat 180 LP Sorter* installed at the factory. The Sorter Kit can be installed on a *Kodak X-Omat 180 LP Processor*.

The Sorter has 9 Bins that hold a maximum of 50 sheets of film each. The sheets may be of any size and are stacked in the order printed. The Laser Printer automatically assigns which films are routed to which Bin, or the operator can make the assignments through the Assign Processor Sorter Bins Screen on the Control Panel of the Laser Printer. Labels are available for the operator to attach to each Bin identifying the Bin by number and the imaging device assigned to that Bin.



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180 LP Sorter Description	
Number of Bins	9
Bin capacity (sheets of film)	50 sheets maximum
Storage compartment for film	A pocket to the left of the left-most Bin holds 50 films
Film sizes	35 x 43 cm, 35 x 35 cm, 11 x 14 in., 8 x 10 in.
Speed (films/hour)	180 sheets of 35 x 43 cm size film per hour
Bin labeling	Operator may attach labels identifying the Bin number and the imaging device assigned to that Bin
Weight of Bin assembly	7.3 kg (16 lb)
Method of assigning Bins	Select Bin numbers through the Display Screen on the Laser Printer
Using the Processor when the Sorter is not working	A bypass Film Tray is located under the Top Cover of the Processor. If the Top Cover is opened, the Processor still runs. Films exit the Processor and stack in the Film Tray.
Access to the inside of the Processor	Access is by removing the films from the Bin, lifting off the Bin assembly, raising the Top Cover, and removing the bypass Film Tray.
Clearing a film jam in the Sorter	Jams can be cleared by removing the films from the Bin, lifting off the Bin assembly, raising the Top Cover, and opening the Access Door in the bottom of the Sorter.

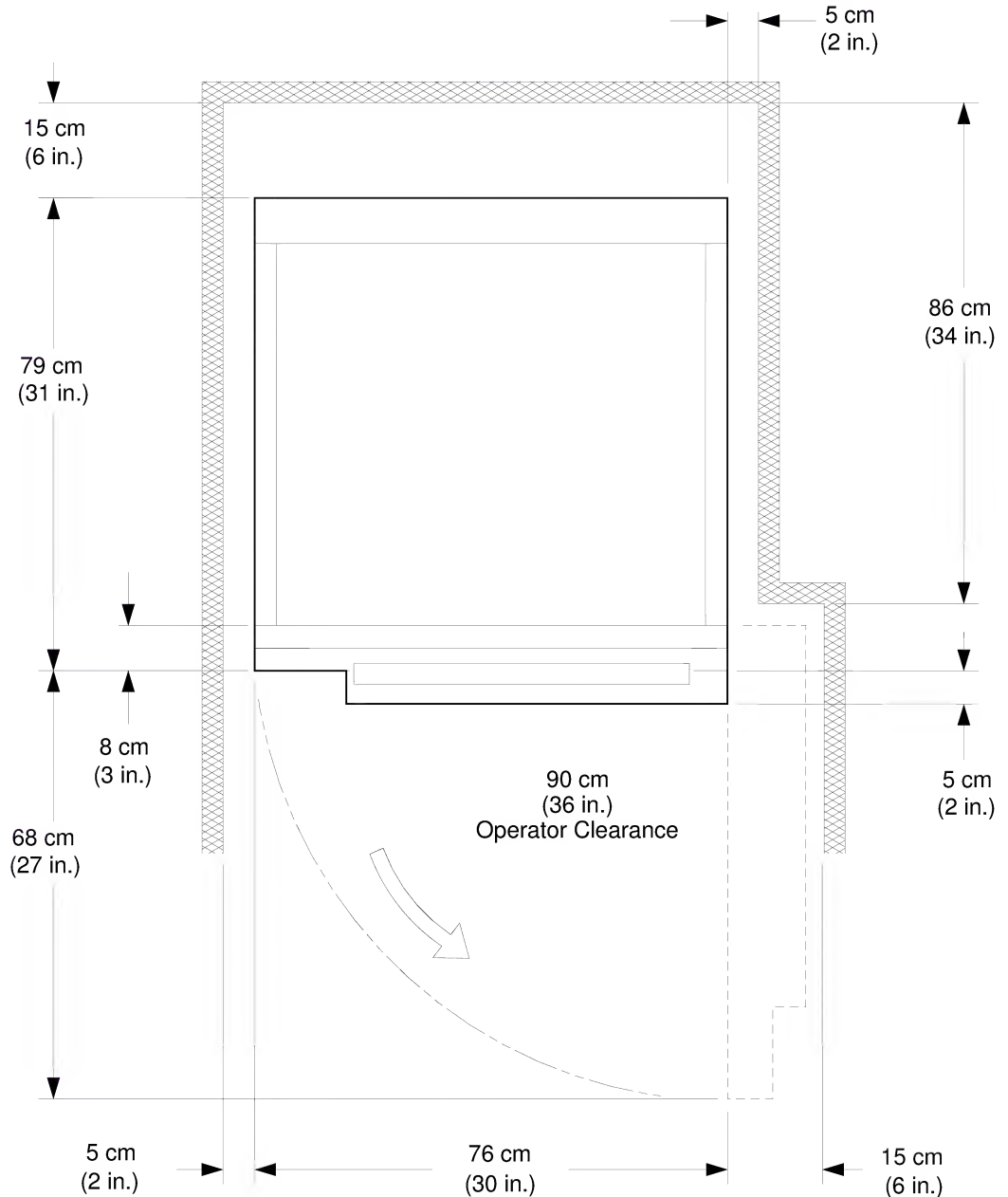
180 LP Sorter Specifications	
Site specifications	Same as for the 180 LP and LPS Processor
Operating temperature	15 to 30°C (50 to 86°F) (Same as for the 180 LP and LPS Processor)
Operating relative humidity	15 to 60% (Same as for the 180 LP and LPS Processor)
Operating altitude	-150 to +2400 metres (-500 to +8000 feet) (Same as for the 180 LP and LPS Processor)
Magnetic field	0.5 mT (5 gauss) (Same as for the 180 LP and LPS Processor)

Section 10: Clearances, Centers of Gravity, and Seismic Brackets — for Either the Printer or Processor

Printer Clearances

Additional space may be necessary for interface cabling and power connection and for Laser Printers with Seismic Brackets. See Pages [40](#) and [41](#).

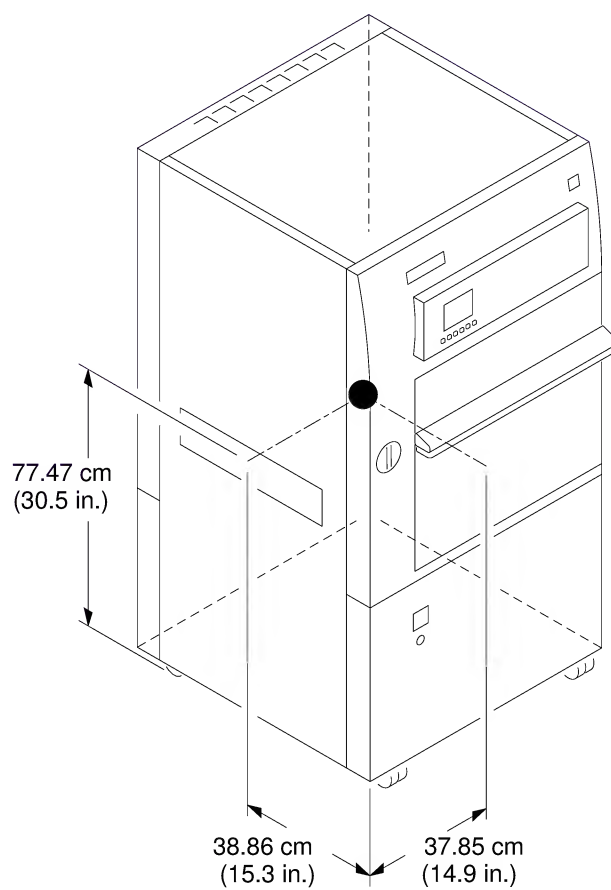
Figure 10–1 **Minimum Wall Clearances for the *Kodak Ektascan 2180* Laser Printer, Top View**



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Center of Gravity — Printer Only

Figure 10–2 Center of Gravity of the Laser Printer



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Seismic/Mobile Kit — Printer Only

A Seismic/Mobile Kit is available for securing the Laser Printer in areas with earthquake concerns, or when installing Laser Printer in a mobile van.



Important

- Do not install a 180 LP or LPS Processor in a mobile van.
- The Fasteners ($\frac{3}{8}$ or 0.375 in.) are not included in the Kit.
- To facilitate moving the Laser Printer for servicing, secure the Floor Brackets with Fasteners (see the illustration) to the floor, not with Studs that are embedded in the floor and Nuts. **It is the responsibility of the customer to install the Floor Brackets.**

Figure 10–3 **Front Seismic Bracket**

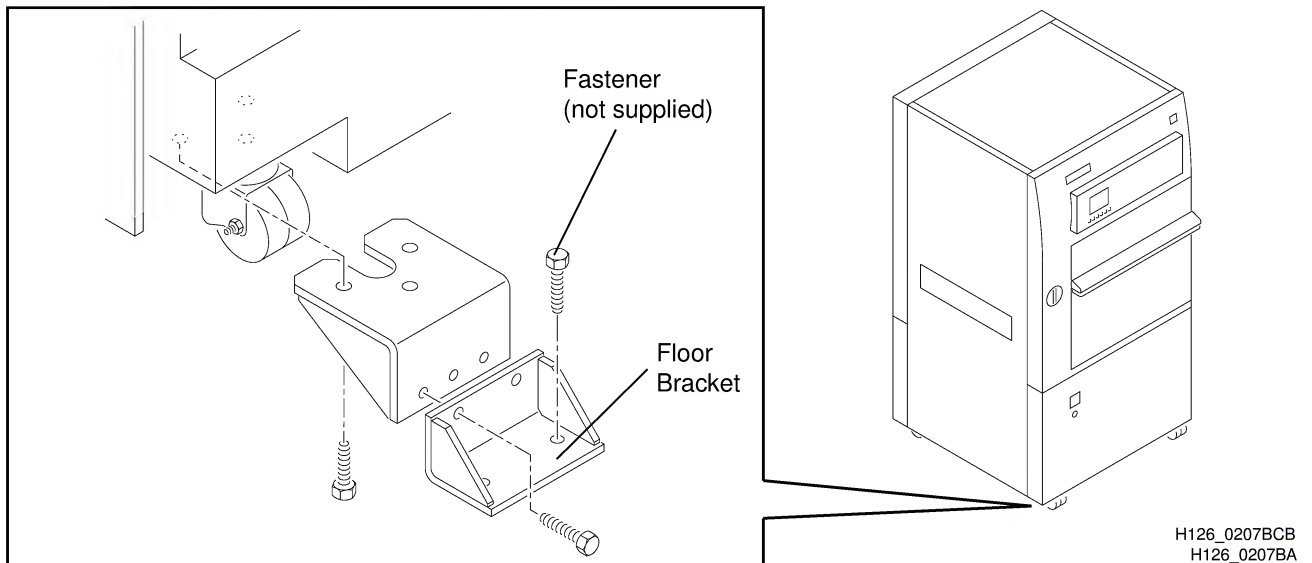
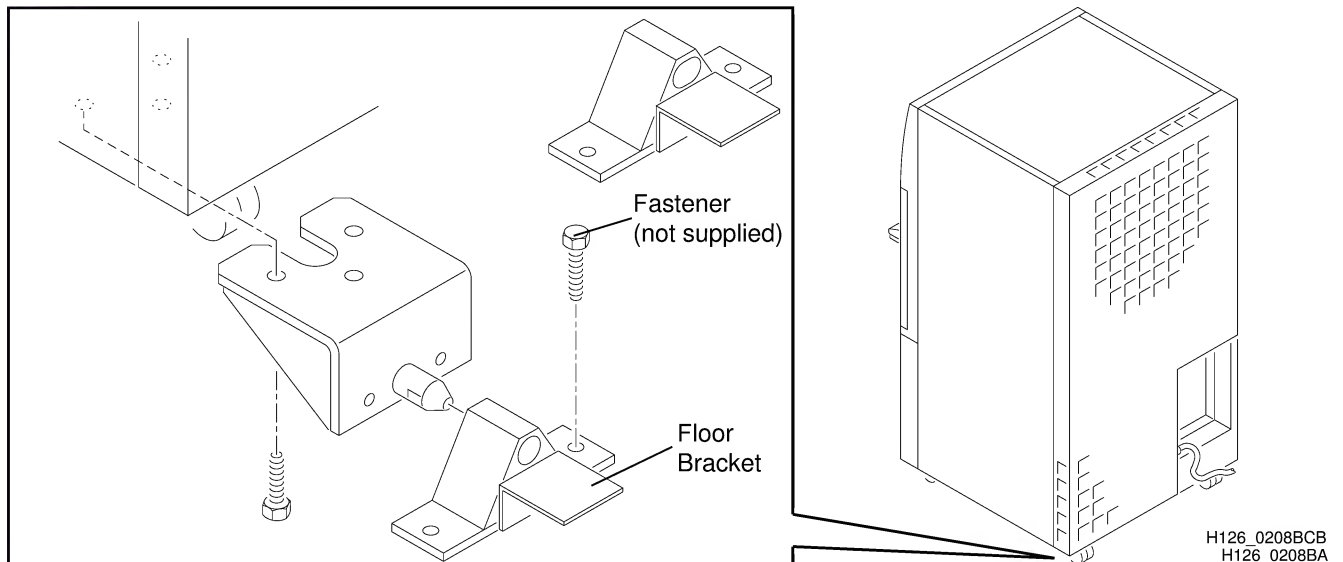


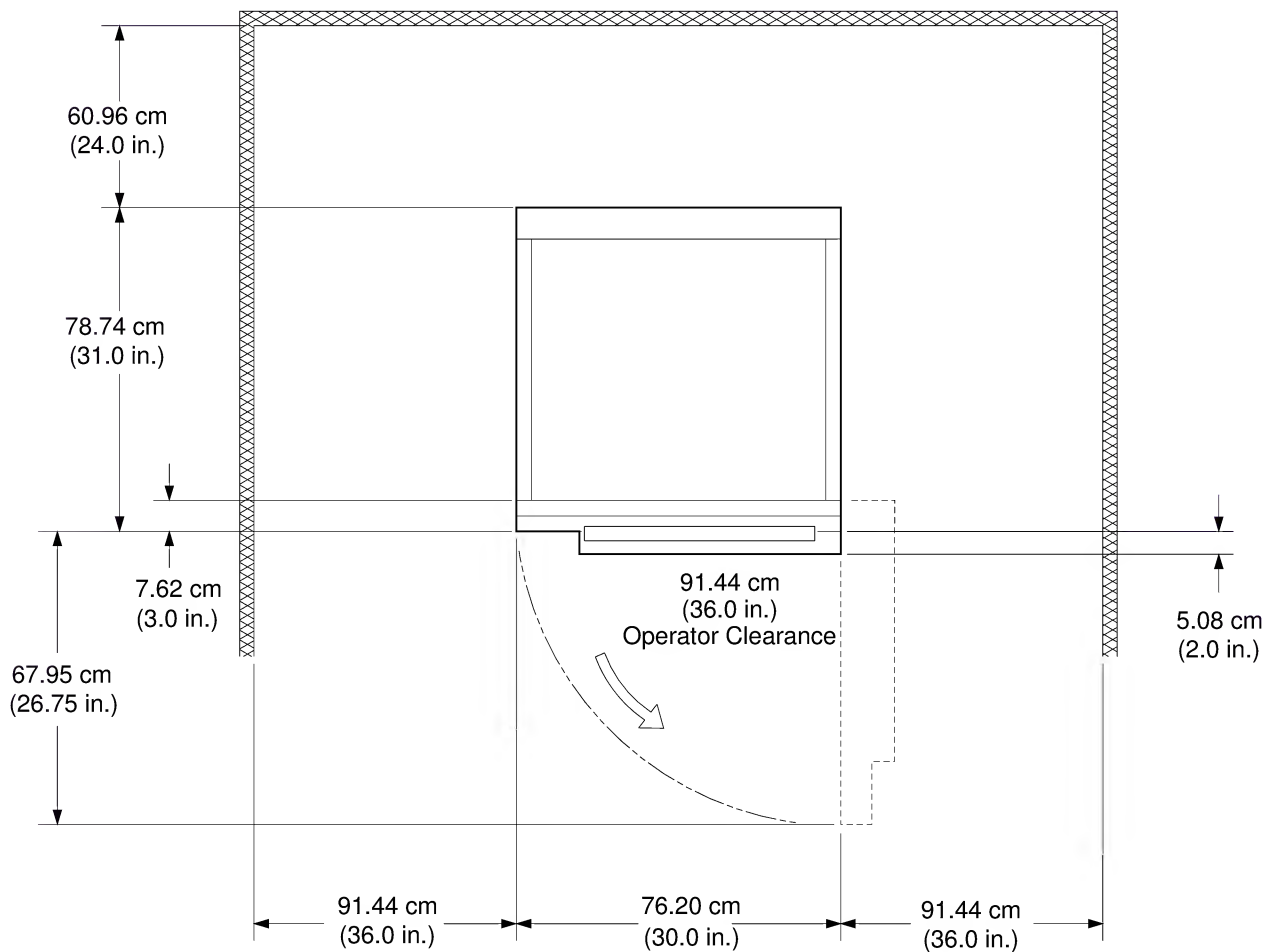
Figure 10–4 **Back Seismic Bracket**



Minimum Wall Clearance for Laser Printer with Seismic Brackets

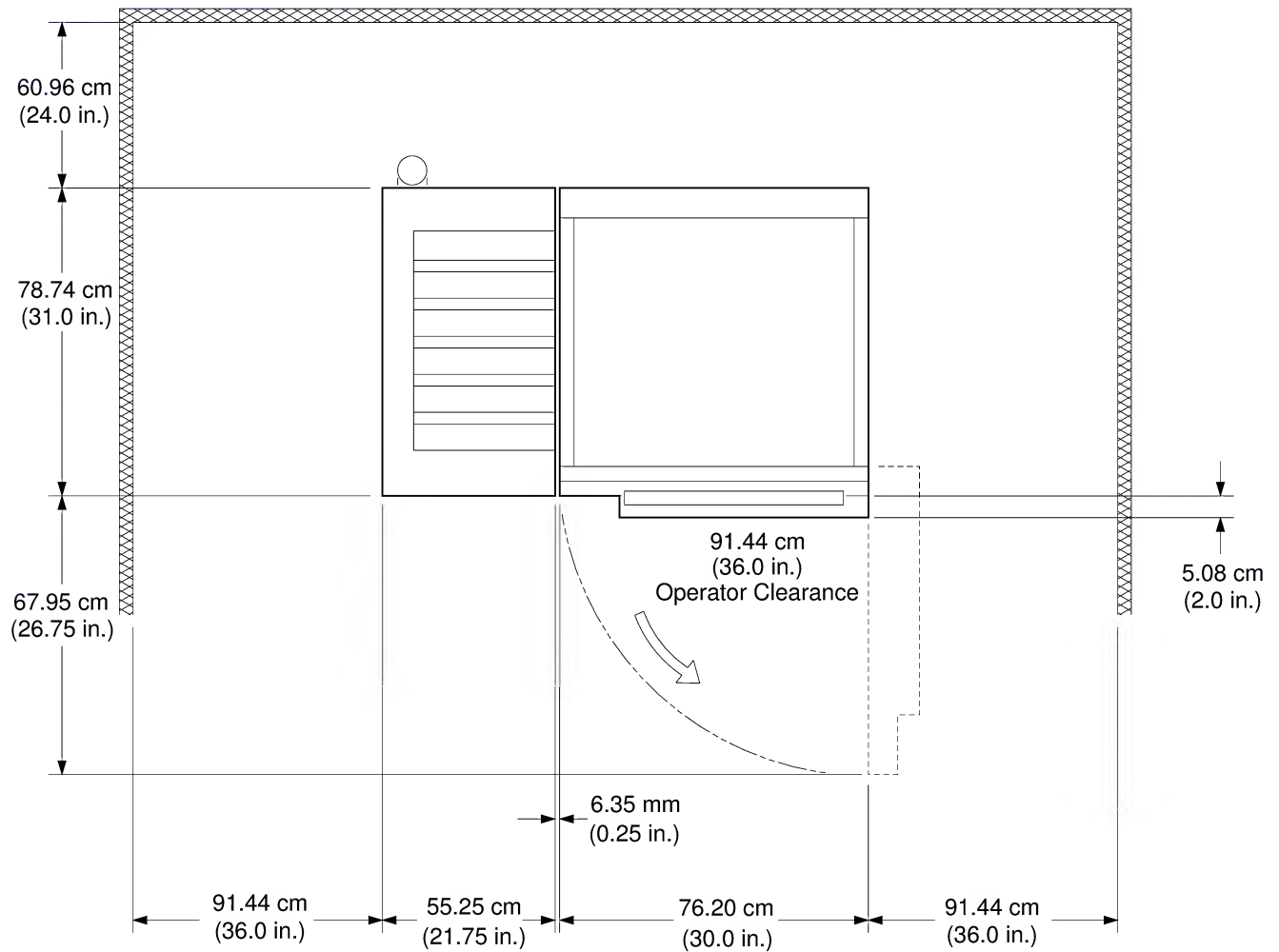
Keep the top and back of the Laser Printer and Processor clear of items. (The Control Terminal may be placed on top of the Laser Printer.)

Figure 10–5 **Minimum Wall Clearances for the
Kodak Ektascan 2180 Laser Printer with Seismic Brackets, Top View**



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Figure 10–6 Minimum Wall Clearances for the *Kodak Ektascan 2180* Laser Printer and the *Kodak X-Omat 180 LP or LPS* Processor with Seismic Brackets, Top View

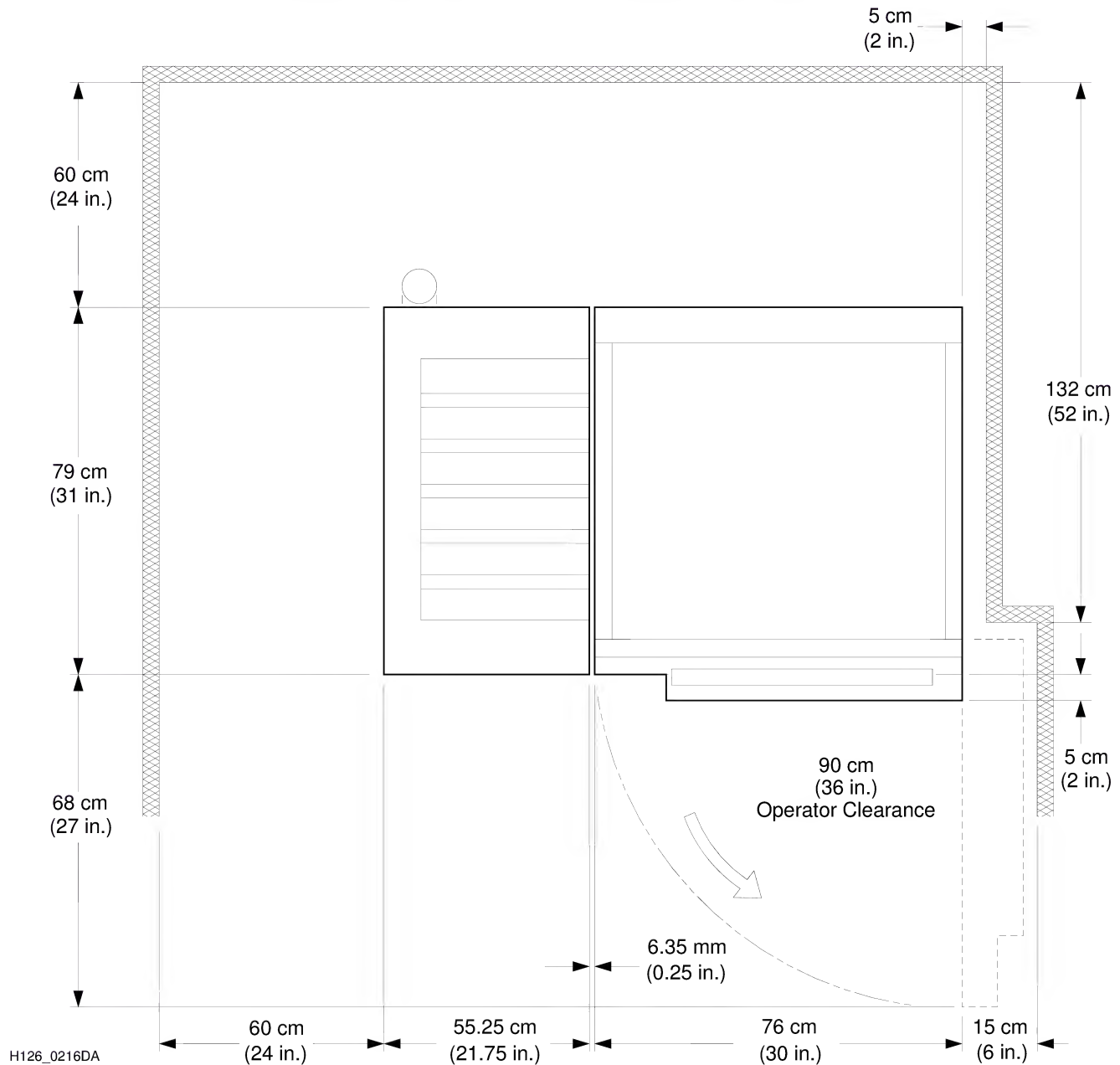


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Clearances — Printer and Processor

Keep the top and back of the Laser Printer and Processor clear of items. (The Control Terminal may be placed on top of the Laser Printer.)

Figure 10–7 **Recommended Minimum Wall Clearances for the *Kodak Ektascan 2180* Laser Printer and the *Kodak X-Omat 180 LP or LPS* Processor, Top View**



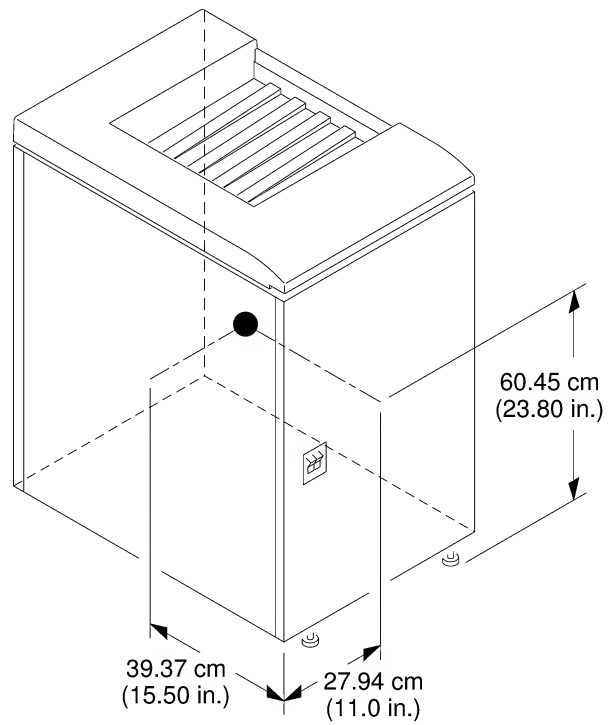
If the Laser Printer has a Processor attached, allow at least a 60 cm (24-inch) clearance at the back for Processor exhaust, service hoses, cables, and airflow. It is recommended that as much clearance as possible be provided to allow space for unrestricted flow of cooling air and access by service personnel. See Recommended Room Layout, Page 29.

Additional wall clearance is necessary for Processors that have Seismic Brackets installed. See Figure 10–7 on Page 42.

See your service representative for more information regarding wall clearances for the Laser Printer and Processor.

Center of Gravity — Processor Only

Figure 10–8 Center of Gravity of the Processor



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Seismic Kit — Processor Only

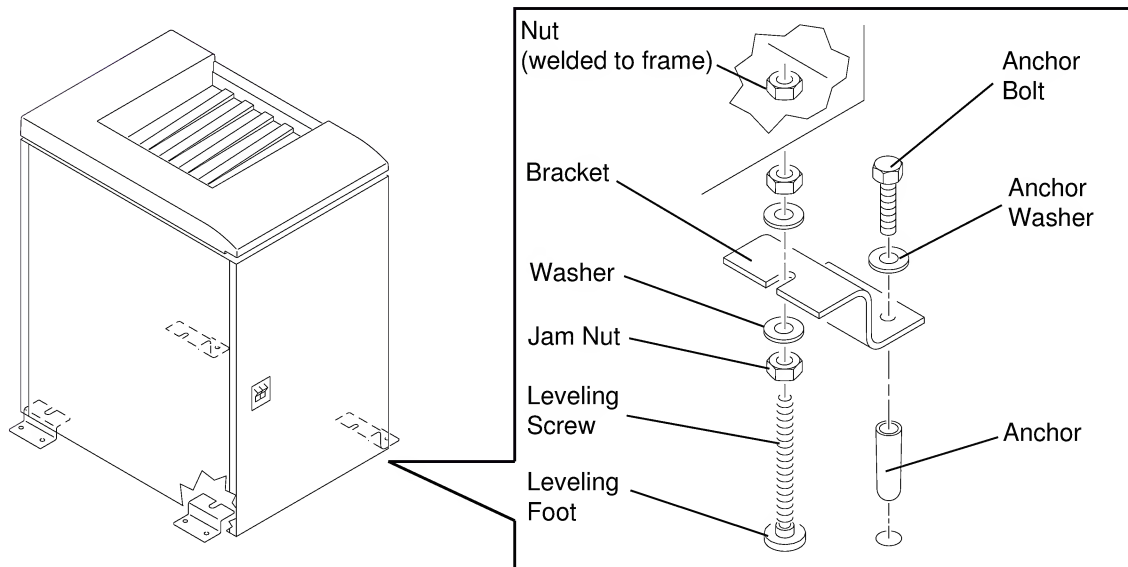
A Seismic Kit is available for securing the Processor in areas with earthquake concerns. The Seismic Kit part number is 981278. The Kit contains Installation Instructions, 4 Floor Mounting Brackets, 8 Jam Nuts, and 8 Washers. For the minimum clearances for a Processor that has Seismic Brackets, see Page [41](#).



Important

- Do not install a 180 LP or LPS Processor in a mobile van.
- The Anchor Bolt ($\frac{3}{8}$ or 0.375 in.), Anchor Washer, and Anchor ($\frac{3}{8}$ or 0.375 in.) are not included in the Kit.

Figure 10–9 **Seismic Kit**



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Section 11: Publication History

Print Date	Pub. No.	ECO No.	Affected Pages	File Name	Notes
Oct 1992	968167	--	All	3230ss_a.txt	First Printing.
Feb 1995	4B5476	--	All	3230ss_b.txt	To add the 180 LPS Processor and make miscellaneous updates throughout.
Feb 1996	4B5476	2619-124	All	ss3230_1_124.doc	To incorporate PCN 1 (8B7023 affecting pages 2, 3, 26, 31, 32, & 33 to update the list of accessories and to make the location of the Replenisher Tanks more specific) in the revised Processor Binder Complete. Plus conversion to the new publishing system.
Sep 1997	4B5476		All	ss323000	First CD-ROM printing. Content is identical to Feb 1996 version; formatting may vary from print version.

Kodak, X-Omat, and Ektascan are trademarks.

